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A STUDY OF THE RELATIONSHIPS AMONG VARIOUS TYPES OF READING SCORES ON GENERAL AND SCIENCE MATERIALS

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Editor's note: Few aspects of professional education have received more attention than that of reading. The author provides new information and suggests new methods of scientific investigation.

MUCH has been written with reference to distinct *types* of reading activity. One hears discussions of recreational reading, study-type reading, reading for appreciation, oral and silent reading. To make the situation more complicated, each of these types of reading activity is composed of various *phases or skills,* notably comprehension, rate, and vocabulary. Still other distinctions are made among reading *materials* which are typical of different school subjects, e.g., science reading, mathematical reading, or reading of "literary" materials.

A growing realization of the complexity of the reading process and of the dependence of school success upon reading ability has resulted in a widespread acceptance of the recommendation that every teacher should be a teacher of reading.

In spite of lively discussion, little has actually been done to determine experimentally what differences and similarities do exist among the reading materials used in the various school subjects, among the various reading skills, and between reading skills and reading materials. The present study represents an experimental attack designed to get some measure of these interrelationships. Three phases of reading skill are studied, namely, comprehension, vocabulary, and rate. Two types of reading materials are used: (1) the general factual and narrative material characteristic of standardized reading tests, and (2) the type of material used in the school study of science.

METHOD OF INVESTIGATION

Two hundred seventeen eighth-grade pupils from the Folwell Junior High School, Minneapolis, Minnesota, were tested on a standardized reading test giving scores on rate, vocabulary, and comprehension. They also took reading tests constructed by the writer to give rate, vocabulary, and comprehension scores on materials of the type used in science classes. By a matched group technique, the effects of chronological age and mental age were ruled out. The test data were broken down on the basis of eight types of reading ability, "t" ratios being used to indicate the probability of differences in the performance of upper and lower matched groups.

DESCRIPTION OF TESTS USED

The California Test of Mental Maturity, Advanced Battery, was chosen for use in determining the M.A.'s of the subjects in this study because it gives a non-verbal M.A. score, which was particularly well-suited to the purpose of matching cases on M.A. with language factors eliminated. In this study it would not have been wise to use an M.A. based upon a test that required reading, because that type of intelligence test score might not give a true indication of the intelligence of the poor readers.

The Traxler Silent Reading Test for Grades 7 to 10, Form 1, was chosen as a measure of general reading abilities because it has the usual type of literary and factual material, and because it yields separate scores on reading rate, vocabulary, and comprehension.

Tests of reading ability on materials such as those used in studying science were constructed by the investigator. They are designed to measure speed-of-reading, vocabulary, and power of comprehension, corresponding to the subdivisions of the Traxler Silent Reading Tests.

The speed-of-reading test was constructed on three levels of difficulty so as to get a more complete picture of reading rate than could be obtained with only one sample of reading materials, as provided in most standardized reading tests. Topics of the reading selections dealt with air, wood, bees, dental hygiene, energy, and electricity. In other words, the three levels of the test took materials from widely varied branches of science as studied in our schools.

It is generally accepted that every school subject has a certain vocabulary unique in itself. Consequently, it was thought advisable to construct a test

on meanings of words commonly used in science to see what relationship vocabulary in a special subject might have to the types of reading abilities and scholastic achievement under investigation. The science vocabulary test contained fifty multiple-choice items so chosen that a wide range of difficulty was covered. All words in this test are included in the list of science words given in Traxler and Knight's *Read and Comprehend.*

The science comprehension test consisted of a series of fifteen paragraphs, each followed by four multiple-choice questions based on the material in the paragraph. These paragraphs were arranged in order of difficulty from very easy to very difficult. Special care was given to the construction of this test in order that it should be truly a test of power of comprehension and not a test of previously acquired information.

As a check on the validity of the three science reading tests, they were submitted to staff members of the University High School who were experts in that area. Selections which they did not consider typical of science study materials were omitted from the final test forms. A recent check on the vocabulary used in the science comprehension test (using *The Teacher's Handbook of Technical Vocabulary* by Luella Cole) showed that 22 per cent of the total number of words used in the test are basic science words. Considering the fact that Cole's list was built to present only the "essential vocabulary of a subject", this high percentage of science vocabulary in the comprehension test indicates validity as a science reading test.

STATISTICAL PROCEDURES

Total scores, rate, vocabulary, and comprehension scores on the Traxler Silent Reading Test and total scores, rate, vocabulary, and comprehension scores on the science reading tests were each arranged in order from lowest to highest, giving eight distributions of reading scores. Each of these eight arrays of scores was broken down by the method described below.

The seventy-five individuals making the highest scores and the seventy-five individuals making the lowest scores in each array were separated from the group. The remaining sixty-seven cases making scores in the middle of the distribution were not used. As many cases as possible from the upper group were matched with cases from the lower group on C.A. and M.A. as obtained from the non-verbal intelligence test. The number of matched pairs secured on the eight arrays ranged from 35 to 41. Unmatched cases

were discarded, all subsequent calculations being based on the performance of the upper and lower groups which had been matched on M.A. and C.A. Statistical data on the matching are given in Table I.

It should be noted that for each of the eight arrays the good and poor readers have been made essentially equal in intelligence and age through the matching techniques and any subsequent differences between the two groups would have to be explained by factors other than intelligence or age.

TABLE I

MATCHING DATA FOR UPPER AND LOWER GROUPS

Basis of Division	No. of Pairs	Mean		Upper Group	Lower Group	M_1-M_2	r_{12}	t
		Upper Group	Lower Group					
Science Reading Total	41							
C. A.		167. 46	167. 49	4. 71	4. 44	—. 03	. 93	—. 09
M. A.		170. 95	170. 68	16. 54	18. 09	. 27	. 94	. 29
Science Reading Rate	39							
C. A.		167. 21	167. 18	4. 11	4. 23	. 03	. 95	. 12
M. A.		174. 41	174. 43	20. 51	20. 20	. 08	. 997	. 55
Science Vocabulary	39							
C. A.		166. 77	166. 87	3. 31	3. 65	—. 10	. 93	—. 83
M. A.		175. 13	175. 21	13. 97	14. 24	—. 08	. 995	—. 29
Science Comprehension	35							
C. A.		168. 11	168. 26	4. 56	4. 10	—. 15	. 93	—. 51
M. A.		176. 37	176. 20	18. 32	18. 31	. 17	. 998	. 60
Traxler Reading Total	40							
C. A.		167. 38	167. 43	4. 60	4. 24	—. 05	. 93	—. 19
M. A.		173. 20	173. 03	19. 00	19. 05	. 17	. 99	. 62
Traxler Reading Total	39							
C. A.		167. 41	167. 85	3. 72	3. 53	—. 44	. 89	—1. 54
M. A.		171. 18	170. 85	15. 52	15. 57	. 33	. 93	. 36
Traxler Vocabulary	37							
C. A.		167. 11	167. 22	4. 82	4. 64	—. 11	. 91	—. 31
M. A.		174. 03	174. 19	16. 09	16. 35	—. 16	. 997	—. 57
Traxler Comprehension	38							
C. A.		167. 68	167. 61	4. 61	4. 27	. 07	. 95	. 32
M. A.		172. 97	172. 87	18. 81	18. 77	. 10	. 997	. 38

The following formula for the standard error of the difference between correlated means was used for these calculations:

$$S.E._{M_1 - M_2} = \sqrt{S.E._{M_1}^{2} + S.E._{M_2}^{2} - 2\, r_{12}\, S.E._{M_1}\, S.E._{M_2}}$$

in which $S.E._{M_1}$ and $S.E._{M_2}$ are the standard errors of the upper and lower group means, and r_{12} is the coefficient of correlation between the upper and lower groups on *C.A.* or *M.A.* as the case may be. The formula used for t is: $t = \dfrac{M_1 - M_2}{S.E._{M_1 - M_2}}$

The statistical comparisons were made on the basis of "t" ratios showing the probability of differences in performance of the upper and lower matched groups. For each of the eight arrays of reading test scores, the upper and lower groups for each type of reading ability were compared on their proficiency in other types of reading abilities.

RESULTS

In considering the findings presented herewith, the reader should remember (1) that inequalities of M.A. and C.A. are not operating in the relationships here discussed, these factors having been eliminated by the matched-group technique, (2) that these data show *group*, not individual, comparisons, (3) that pupils from only one grade (Grade VIII A) were studied, and (4) that the results are stated in terms of scores on tests. Whatever weaknesses are inherent in the measuring instruments must, of necessity, weaken the conclusions drawn on the basis of test results.

FINDINGS ON DIVISION BY SCIENCE READING TOTAL

The facts presented in Table II show the performance of a group of forty-one pupils making *high* total scores on the science reading tests as compared with the performance of forty-one pupils of approximately the same mental and chronological age making *low* total scores on the science reading tests.

Table II shows that the upper group on the basis of total science reading score is significantly superior to the lower group on all reading test scores. All the "t's" are well beyond the 1 per cent level of significance (2.704 for 40 degrees of freedom).

The results of analysis of data in Table II, then, would seem to indicate that eighth-grade pupils rating high in total science reading score are almost certain, *as a group*, of also being superior in rate of reading, vocabulary, and comprehension of both scientific and general reading materials, while the group having low total science reading scores will be just as certain of being inferior to the other group in all the types of reading abilities under observation.

GENERAL RESULTS

Similar analyses of data to that given in Table II were completed for the upper and lower groups on (1) science reading total, (2) science rate-of-reading, (3) science vocabulary, (4) science comprehension, (5) Traxler

TABLE II

COMPARISON OF UPPER AND LOWER GROUPS SELECTED ON THE BASIS OF TOTAL SCIENCE READING SCORES

N = 41	Means		S. D.'s		M_1-M_2	t
	Upper	Lower	Upper	Lower		
Science Reading Total	127. 22	92. 66	9. 40	9. 73	34. 56	16. 35
Science Rate of Reading	49. 83	37. 00	12. 00	7. 28	12. 83	5. 86
Science Vocabulary	26. 29	18. 00	5. 02	3. 41	8. 29	8. 74
Science Comprehension	51. 10	37. 66	6. 77	6. 30	13. 44	9. 29
Traxler Reading Total	106. 81	75. 54	9. 80	16. 15	31. 27	10. 61
Traxler Rate of Reading	40. 71	30. 17	9. 77	6. 91	10. 54	5. 62
Traxler Vocabulary	25. 34	16. 15	6. 82	5. 45	9. 18	6. 76
Traxler Comprehension	40. 59	29. 27	7. 49	8. 85	11. 32	6. 26

Means and standard deviations were determined from raw scores.

The standard errors of the differences were computed by the formula for unrelated groups:

$$S.E._{M_1-M_2} = \sqrt{S.E._{M_1}^2 \; S.E._{M_2}^2}$$

$$t = \frac{M_1 - M_2}{S.E._{M_1-M_2}}$$

reading total, (6) Traxler rate-of-reading, (7) Traxler vocabulary, and (8) Traxler comprehension. Instead of presenting eight separate tables and eight separate discussions of results, the "t" ratios from all these analyses have been combined in Table III. By inspection of this table, one can gain a composite picture of the total situation as revealed in this study. Certain consistent trends running through the data from one method of breaking down the data to another are worthy of special note in a general summary of findings.

1. The first such consistent relationship to be noted is the great number of statistically significant differences between the upper and lower reading groups, whether they are divided on one basis or another of reading measurement. *It seems that a good reader as measured by one type of reading test is apt to be a good reader as measured by other types of reading tests.* Fifty-six of the sixty-four "t's" are beyond the 1 per cent level of significance.

2. Another consistency which is quite apparent from the study of Table III is the fact that the statistical significance of the difference between upper and lower groups on any particular type of score according to any particular basis of division is very close to the significance of the difference

TABLE III

COMPARISON OF *t's* OBTAINED BY THE USE OF VARIOUS BASES OF DIVISIONS INTO UPPER AND LOWER GROUPS

	Science Reading Total**	Science Rate of Reading	Science Vocabulary	Science Comprehension	Traxler Reading Total	Traxler Rate of Reading	Traxler Vocabulary	Traxler Comprehension
Science Reading Total	16.35	6.42	7.60	7.79	9.24	6.76	8.30	6.60
Science Rate of Reading	5.86	14.80	.21*	.07*	3.31	10.34	.50*	1.08*
Science Vocabulary	8.74	.26*	24.84	5.26	7.75	3.44	8.27	5.80
Science Comprehension	9.29	.29*	6.06	15.25	7.37	3.63	7.15	6.72
Traxler Reading Total	10.61	4.20	7.12	7.21	21.65	9.91	12.60	12.62
Traxler Rate of Reading	5.62	7.18	3.04	3.95	9.65	15.97	5.26	5.22
Traxler Vocabulary	6.76	1.48*	7.75	6.12	13.33	4.31	17.87	9.11
Traxler Comprehension	6.26	1.91*	6.45	5.70	14.17	5.34	8.47	16.85

* All *t*'s which do not satisfy the 1% level of significance are starred.
** Note that this column is the same as the last column of Table 2. Each other column in this table is the "*t*" column of a similar table based upon an analysis of data according to the criterion stated at the head of the column.

when that type of score and basis of division are reversed. An example will clarify the point. When upper and lower groups were determined on the basis of science reading total, the difference between the same groups on the scores in Traxler comprehension yielded a "t" of 6.26. When upper and lower groups were determined on the basis of Traxler comprehension, the difference between the same groups on th scores in science reading total yielded a "t" of 6.60. Other pairs of "t's" may be checked against each other in the same way, and will be found to be quite consistent. In no case was a difference found to be significant by one method of breaking down the data and not significant by another method of analysis. This should strengthen one's respect for the reliability of the methods used.

3. *When one looks for evidences of relationship between the two types of reading materials (general or science), it becomes apparent that there is more evidence of similarity than of dissimilarity.* For example, when upper and lower groups were divided on the basis of science vocabulary, they were also found to be significantly different in Traxler vocabulary score; when division was made on the basis of Traxler comprehension score, the groups also proved to be significantly different on science comprehension score. The reader must remember, of course, that reading purposes were held fairly constant on the two comprehension tests. If purposes for reading had varied widely, differences may have appeared.

4. The *only* "t's" which are too small to be considered statistically significant are associated with *science rate-of-reading*. When division into upper and lower groups was made on the basis of science rate-of-reading, those groups were also significantly different on Traxler rate-of-reading (see Result 3 above) and on both total scores, which included rate scores. On the same science rate-of-reading division, however, the upper and lower groups were *not* significantly different on either vocabulary or comprehension scores (science or Traxler). *We cannot say, therefore, that the students attaining a high speed in reading science materials are significantly superior in either science or general vocabulary or in comprehension of either science or general reading materials.*

Pursuing this matter further, we find that when upper and lower groups are chosen on the basis of either type of vocabulary test or on the basis of either type of comprehension test, *the superior readers on any of these bases are not significantly faster in reading the science study materials.*

5. Finally, we note that *the only deviations from the striking concomitance of reading abilities* (noted in Result 1 above) *are found among different phases of reading skill* (rate vs. vocabulary and comprehension) *rather than among reading materials* (general-narrative material vs. science study material).

QUESTIONS CONCERNING READING RATE

The situation regarding rate-of-reading and its lack of relationship with other phases of reading skill leads to some interesting questions.

1. If the rapid-reading group who make no better comprehension scores than the matched slow-reading group were instructed to read at a slower rate, would their comprehension scores increase?

The answer to this question is closely connected with the previous problem. If this question were answered affirmatively, it would indicate a causal relationship between rate and comprehension which would be of practical significance to the teacher, and would give her a simple but effective technique for increasing comprehension. However, there is probably no such definite one-way answer to the problem. There are too many other factors entering into the situation.

2. What are the most suitable rates of reading for materials of varying levels of difficulty? What are the most suitable rates of reading for varying

types of reading materials? If rapid readers of science material have no significant advantage over the slow readers either in other reading skills or in school achievement, what possible advantage can there be in reading that type of material at that rapid rate? It seems that the practical solution should be an attempt to train pupils to judge reading materials as to difficulty and adjust their rates of reading accordingly. The investigation of this problem, with all its complicated ramifications, will probably result in the formulation of general rather than specific recommendations to allow for individual differences in abilities and attitudes.

3. Has there been too much emphasis upon increasing rate of reading in the schools? To what extent should rate be emphasized?

The opinion of the writer is that both of these questions must eventually be answered by studying the reading habits of individual pupils. This study shows that some pupils are reading difficult materials very rapidly without a corresponding gain in comprehension of that material or in school achievement, while others in the same class are reading the same materials much more slowly. A recommendation which suits the needs of one child may be just the wrong advice for another. No doubt, there are individual pupils who have increased their rate beyond desirable limits; on the other hand, there are some who are reading too slowly for optimum results. Rate should be emphasized to the extent suited to the abilities of the individual and to the difficulty and nature of the reading materials. Just what extent that means can be better determined after more investigation has been done on the problem.

IMPLICATIONS

Implications to be drawn from this study are of concern to both the reading research worker and the secondary-school teacher. The results seem to indicate that experimentation on the inter-relationships of different reading abilities should deal not only with subject-matter differences but also with levels of subject-matter and types of reading skills demanded. The only significant differences which were found in this study were on comparisons of different reading skills (rate vs. comprehension and rate vs. vocabulary). It may well be that levels of performance would be another differentiating factor.

The teacher who reads the results of this study in uncritical fashion may come to the conclusion that every teacher does *not* need to be a teacher

of reading. The science teacher, for example, may conclude: "If there is more concomitance than there is difference in reading abilities on general and scientific materials, I can leave the instruction in reading to the English teacher." This is, however, a false conclusion. The fact of the matter is that poor readers of "general" reading material seem, as a group, to be poor readers of specialized science material. These students (who, by the way, are those who need remedial reading instruction) need all the help they can get—from the English teacher, from the science teacher, from the history and mathematics teachers.

The fact that fast readers of science materials are not significantly superior in other reading abilities indicates that what many students need is instruction in adaptation of speed of reading to specific purposes for reading and to types of material being read. Further research will be necessary as to which of these adaptations are most necessary; but in the meantime, every teacher can well devote time and effort to informal experimentation and individualized reading instruction in the classroom.

DOES THE GIFTED CHILD HAVE A LOW AQ?

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Editor's note: Much has been written on the AQ. The author presents a critical discussion of the AQ and doubts the soundness of the use commonly made of it.

IT IS often remarked that we spend a great deal of time and energy helping the dull and mentally defective children with little expectation of any important returns on our investments, and that we put forth relatively little effort in behalf of bright and gifted children where the dividends on our investments might be very great.

Schoolmen generally feel that under ordinary conditions the bright child is not doing the work he is capable of and that he is not accomplishing what might reasonably be expected of him. The work in our schools, it is claimed, is too easy for the bright child and does not challenge his capacities.

The assumption that the bright child is loafing and is not achieving what one would naturally expect a pupil with his intelligence and scholastic ability is usually based on the fact that correlations between intelligence quotients and accomplishment quotients are consistently negative and often of significant figures. The explanation usually given for this tendency of pupils of high IQ's to have relatively low AQ's[1] is that the gifted child does not need to put forth any great amount of effort to get passing grades and is satisfied with—what is for him—mediocre achievement, while the slow child is compelled to work more nearly up to his limit or fail.

The writer is not satisfied with this explanation, for it has been his experience to note that bright pupils seem to be just as industrious and work just as hard as, if not harder than, dull pupils. There are other motives for industry than mere compulsion. Children like to do those things at which they are likely to be successful. Bright children are more successful in their school work than other children and it is natural for them to take a greater

* This article has been condensed from a research paper written in a course in Educational Psychology offered by Dr. Palmer O. Johnson of the University of Minnesota.

[1] Franzen, A. "The Accomplishment Ratio," Contributions to Education, No. 125, (New York: Teachers College, Columbia University, 1922).

interest in their studies. In regard to dull children, it may also be said that they often do just enough work to get passing grades as they have no particular interest in their school work.

Leta Hollingworth[1] says, "Nearly all gifted children love to read, and will read anything they can find." It is difficult to reconcile such a statement with other statements we often hear, such as, "The bright child is the lazy one."

Other motives that are more effective in promoting study among bright children than among dull children are competition and ambition. In fact, it may be said that pupils who are of superior intelligence also tend to be superior in other factors that may affect their study, such as health, home conditions, and personality. All in all, one may be justified in claiming that there is just as much incentive for study for the bright pupil as there is for the slow pupil.

Although various writers have frequently called attention to the fallacy of using the AQ to compare actual accomplishment relative to capacity of bright and slow pupils, their warnings have for the most part passed unnoticed, and the bright child is often regarded as the pupil who does the least in comparison to his ability. The work of Wilson[2] and of Douglass and Huffaker[3] deserves special mention in this case, as they seem to have presented the best evidence of the error in using the AQ to determine the accomplishment relative to capacity of bright and slow children. Wilson found that by introducing chance errors into hypothetical true EQ's and IQ's a negative correlation of —.38 was produced between the AQ and IQ. Douglass and Huffaker have presented algebraic proof that under present conditions of testing it is practically impossible to obtain anything but a negative correlation between IQ and AQ.

It was back in the latter part of the nineteenth century that Francis Galton noticed that the children of tall parents were not as tall as their parents and that the children of short parents were not quite as short as their parents. The present writer would like to suggest Galton's "regression

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[1] Leta S. Hollingworth, *Gifted Children* (New York: The MacMillan Company, 1926), p. 147.

[2] William R. Wilson. "The Misleading Accomplishment Quotient." *Journal of Educational Research,* XVII (September, 1928), 1–10.

[3] Harl R. Douglass and C. L. Huffaker. "Correlation between Intelligence Quotient and Accomplishment Quotient", *Journal of Applied Psychology.* 13: 76–80.

towards the mean" as an explanation for the consistent negative correlation between the intelligence quotient and the accomplishment quotient.

We are all more or less aware of the specialization that exists among school children. A pupil may be a little better in arithmetic than he is in spelling, another is better in reading than in geography, still another likes history and is likely to excell in that subject. A pupil does not have uniform capacity to achieve in the various school subjects that he is taking. Now if we select the best pupils in arithmetic, the chances are that they will not rank as high in other subjects because we have selected them on the basis of arithmetic ability and therefore we have included in the group that we selected many pupils who have special ability in arihmetic. The same holds true if we select pupils on any other basis. They will rank high on the basis they were selected because that is how they were selected, but on any other basis or in any other subject they will have a tendency to rank lower. We have been selecting our pupils, for the most part, on the basis of their ability to achieve on intelligence tests. This ability to achieve on intelligence tests is specialized the same as the ability to achieve on arithmetic or reading tests. After we have selected the pupils that rank high on intelligence tests we find they do not rank so high on other tests. On the other hand, those who rank the lowest in one test are not likely to rank quite as low on another test. This produces that familiar tendency of regression towards the mean.

Since pupils who rank high on intelligence tests do not rank quite as high on achievement tests, their IQ's will be higher than their EQ's. Terman, for instance, found that the gifted children that he had selected averaged 150 in intelligence quotients but that they only averaged 140 in educational quotients. When we find the accomplishment quotients of these gifted children by using the equation, $AQ = \frac{EQ}{IQ}$, it is inevitable that they get low accomplishment ratios.

In addition to the specialization of abilities, chance errors enter into our measurements and often give a pupil a high rank in one test and perhaps a low rank in another test. We can mention these two factors of specialization and chance errors as the reason for this tendency for pupils to regress towards the mean when their scores on one test are compared with their scores on a second test.

The negative correlation between IQ and AQ, then, may be ascribed to this tendency of EQ's to regress towards the mean when compared to the IQ's. The amount of this regression and therefore the size of the negative correlation between IQ and AQ depends on two factors—the correlation between EQ and IQ and the range or variability of the EQ and IQ. In our regression formula, $x = r\frac{\sigma x}{\sigma y}y$, it is evident that as r becomes smaller, x approaches zero, and when σy is greater than σx, x will be nearer zero. The closer x is to zero, the greater will be the regression towards the mean. (x and y are deviations from the mean of any two sets of scores or measures. In this illustration x is the deviation of any EQ from the mean of the EQ's, and y is the deviation of any IQ from the mean of the IQ's.)

To get a near-zero correlation between IQ and AQ, it thus becomes necessary to have a high correlation between IQ and EQ (or the achievement test and the intelligence test) and not much difference in the variability of the two, or to have a much greater variability in the numerator (EQ) than in the denominator (IQ) of our ratio. Anything that contributes to a lower correlation between IQ and EQ—such as the specialization of abilities in pupils or chance errors of measurement—will tend to increase the size of the negative correlation between IQ and AQ. As a rule the IQ's have greater variability than the EQ's and this helps to increase the size of our negative correlation.

If we select our pupils on the basis of EQ we find that the IQ's will regress towards the mean. Thus pupils with high EQ's will not have quite as high IQ's, and pupils with low EQ's will have IQ's a trifle higher than their EQ's. This produces a positive correlation between EQ and AQ.

Of the various proposals to make the AQ more reliable and meaningful, those of Nygaard[4] and Cureton[5] have, perhaps, the most merit. They propose to find an AQ by dividing the EQ by the estimated EQ based on the IQ. Cureton calls this the regression-accomplishment quotient and labels it the RAQ. The equation is $\text{RAQ} = \frac{\text{EQ}}{\text{est EQ}}$. This procedure apparently has merit because it corrects for the regression effects of EQ on IQ, and also for

[4] P. H. Nygaard. "A Revised Accomplishment Quotient," *Journal of Educational Research*, XVIII (June, 1928), Pp. 27–30.

[5] Edward L. Cureton. "The Accomplishment Quotient Technic," *Journal of Experimental Education*, V (March, 1937), Pp. 315–326.

the usual tendency of the denominator (IQ) to have greater variability than the numerator (EQ) of our ratio.

That the accomplishment quotient technic is not a highly commendable statistical procedure may be deduced from an experiment similar to the following:

We have been using the intelligence test as an estimate or an index of a pupil's capacity to perform on a school achievement test. It appears reasonable to assume that a pupil's score on one intelligence test is an even better index of his capacity to perform on another intelligence test than on an achievement test. The present writer computed the AQ's of 50 ninth-grade pupils by dividing their accomplishment on the Miller intelligence test by their indicated capacity to achieve on this test as measured by the Terman intelligence test, according to the equation, $AG = \frac{\text{IQ (Miller test)}}{\text{IQ (Terman test)}}$. These AQ's were then correlated with the IQ's derived from the Terman test. The coefficient thus obtained was —.44. This negative correlation is due to the regression towards the mean—pupils who made high scores on the Terman test were not quite so high on the Miller test, pupils who ranked high on the Miller test did not rank quite as high on the Terman test. Apparently as soon as two tests differ ever so little in content and construction, pupils will show specialization of accomplishment and the scores on one test will regress towards the mean when compared with scores on the second test. We have, in the past, been basing our claim that the gifted children are not achieving up to capacity on a statistical procedure similar to the one given above. By the use of this same procedure it is possible to make the claim that gifted children are not achieving up to capacity on intelligence tests.

The use of the intelligence test as a measure of the industry and motivation of our pupils is open to question. It is a common custom to assume that a child who does well in school work with reference to his intelligence quotient shows good industry and is well motivated, while the child who does poorly in school compared to his IQ suffers from lack of industry and lack of proper motivation. To some extent this may be true. An achievement test may often measure accomplishment over a relatively short period—for instance, a few months—whereas an intelligence test covers achievement over a long period. If a pupil is not accomplishing up

to his capacity in this short period, this may be brought out by comparing his achievement with what he has been doing in the past as indicated by the intelligence test. However, most educators concede that an intelligence test is essentially a general achievement test. If this be so, the chances are that the intelligence test is not entirely free from the influence of those factors that affect the ordinary achievement test, such as health, home conditions, interests, industry and motivation. This may be especially evident in the earlier years. A child of five or six years of age may show special interest in reading. He acquires a large vocabulary and much information through his reading. When given an intelligence test he is therefore able to get a high score and consequently a high IQ. This same high IQ is then used to show that he is not achieving up to capacity in reading. Apparently the law of diminishing returns is operating. According to Terman[6] gifted children of eight or nine years of age read about three times as many books as the average child of the same age and also read a greater proportion of non-fiction material. Yet the gifted child usually has a reading quotient below his intelligence quotient, and the dull child who seldom opens a book seems to be able to get with little effort a reading quotient above his intelligence quotient. It hardly seems fair to demand that the gifted child spend more time in reading than the average child—if the average child is allowed a certain number of hours in which to play, it would appear that the gifted child is entitled to an equal number.

It is a common practice to assume that a pupil with an IQ of 120 and an EQ of 110 shows poor industry and lack of motivation, and that a pupil with an IQ of 100 and an EQ of 110 shows good industry and is properly motivated. In other words, we are using the intelligence test as the "control" when we wish to measure the industry and motivation of our pupils. Now a "control" should be free from those things that we are attempting to measure. If the intelligence test is chiefly an achievement test, how can it be entirely free from the factors that affect accomplishment on the achievement test, as industry and motivation?

It is for these reasons that the present writer feels that perhaps we have not been using the proper procedure in determining which child achieves the most in relation to his capacity to achieve. The use of one achievement

[6] Lewis M. Terman, *Genetic Study of Genius*, (California: Stanford University Press), Vol. I, p. 454.

test (the intelligence test) to determine whether or not a pupil is accomplishing up to capacity on another achievement test appears a little far-fetched. We can probably find out more about whether the gifted or the less gifted child does the most relative to capacity by such things as time spent in study, teachers' ratings of studiousness, amount of supplementary reading, and participation in extra-curricular activities.

Studies by Williamson,[7] Jones and Ruch,[8] and others tend to show that on the college level students of low IQ study somewhat more in terms of hours per week than do students of high IQ. However, it may be that reports on the amount of study as given by the pupils, themselves, are not very reliable. Pupils of low IQ often take much more time to get started and they are likely to waste more time through lack of concentration than pupils of high IQ.

Teachers' ratings on the studiousness of pupils usually have been discounted because it is felt that the teacher believes that the pupil who gets the most work done works the hardest. Teachers do not judge the amount of industry of their pupils only by their accomplishment, however, for they have them in study periods and in classes and thus are able to observe the pupils at work. In a survey of 34,000 school children in the state of Minnesota,[9] the teachers were asked to rate pupils on such traits as inattentive, lacking in interest, "quitter", lazy, sleepy, and apathetic. As rated by the teachers a distinct tendency was found for pupils with high intelligence quotients to be characterized by favorable traits, and the pupils with low intelligence quotients to be characterized by unfavorable traits. It has been shown that, as a rule, bright children are more interested in school work than slow children, and it appears reasonable to assume that they pay better attention and do more work on their studies.

Investigations usually indicate that the brighter children do more supplementary reading and take part to a greater extent in extra-curricular activities

[7] E. G. Williamson. "The Relationship of Number of Hours of Study to Scholarship," *Journal of Educational Psychology*, 26: 682–688.

[8] Lonzo Jones and G. M. Ruch. "Achievement as Affected by the Amount of Time Spent in Study." *27th Yearbook National Society for the Study of Education*. Part II. Pp. 131–134. 1928.

[9] J. E. Lunn, E. L. Vitalis and others. "Pupil Personnel Study of Pupils in Minnesota Public Schools," Series of Bulletins Published by Minnesota Council of School Executives. Copies are obtainable from 309 State Capitol Building, St. Paul, Minn. 1939. Part I, Sect. 12, p. 1–12.

than the slower pupils. Of a group of 250 high school students, the present writer found that although the pupils of low IQ reported that they studied a trifle more at home each week, they spent much less time in the extra-curricular activities of the school. In both home study and extra-curricular activities, the pupils in the highest one-third in IQ averaged four hours more per week than did the pupils in the lowest one-third in IQ. Accomplishment in extra-curricular activities is not included when we measure educational achievement by tests. However, these extra activities should have some value, otherwise they have no place in the curriculum (or extra-curriculum), and when we try to determine achievement relative to capacity these activities should be taken into consideration.

In regard to the question asked in this paper, "Does the gifted child have a low AQ?", the answer is yes, he does have a low AQ, but the procedure used in deriving this AQ is not very sound. Perhaps the safest answer to the question of accomplishment relative to capacity is to say that as long as we have no accurate measure of innate capacity it is impossible to determine what child accomplishes the most for his capacity.

Nevertheless the present writer feels that the gifted child is working up to capacity to a greater extent than either the average or the slow child, and that, therefore, there is no great need for special provisions for the gifted in the grades or high school. It is recommended, however, that the scholarship idea be extended and enlarged upon so that on graduation from high school the pupils of exceptional talent and ability will be able to pursue studies in fields in which they show interest and aptitude.

Following is a brief summary of this paper:

It is suggested that, perhaps, the best explanation for the negative correlation between IQ and AQ is the tendency for pupils' scores on one test to regress towards the mean when compared to their scores on another test.

Apparently this regression of scores towards the mean is due chiefly to the specialization of accomplishment on the part of pupils. A pupil is usually better in one subject than another, or rather, he does not achieve equally well in all subjects or all tests.

Since the intelligence test is largely an achievement test, it is doubtful if it is entirely free from the effects of such factors as industry, interest, and motivation. If the intelligence test is affected by these factors, it cannot very well be used as the "control" when we seek to determine the effect of these factors on achievement.

It is recommended that the scholarship idea be extended so that upon graduation from high school gifted children will be able to continue their studies in fields in which they are interested and in which they show aptitude and ability.

A FOUR YEAR STUDY OF THE FRESHMAN CLASS OF 1935 AT THE WEST VIRGINIA UNIVERSITY

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Editor's note: Educationalists now for some time have concerned themselves with the factors conditioning attendance and school success. The author presents a study of this matter at the West Virginia University.

THIS four-year study of the Freshman Class of 1935 at West Virginia University includes three main divisions. The first part is a study of the attendance records in relation to the intelligence test scores, and asks the question: Do the students with the low intelligence test scores withdraw from the University early in their career and before graduation; and if not, in what lines of University work do they succeed?

The second part deals with the academic records of the same students in relation to withdrawals, and asks the question: Is it the poor academic record which causes the withdrawal from the University, and not the intelligence test scores; and if not, in what college, school, or pre-professional group do they succeed?

The third part deals with the relation of intelligence test scores and academic grades, semester by semester, using the correlation method.

PART ONE

In the autumn of 1935, 437 students who entered the West Virginia University took the intelligence test prepared by the American Council on Education. On the 1935 issue of the test there was a possible score of 389 to be made. The scores of this group ranged from 46 to 317, with a mean score of 149.5.

In order to handle the problem of withdrawals, the record of each student was studied to find out the number of semesters he was enrolled in the University. If the student was not enrolled the eighth semester after his entrance he was considered to be a permanent withdrawal. This may not actually turn out to be the case in all instances. For example, one student reentered the University after an absence of two years; so it is possible that some who were not enrolled the last semester of the fourth year may yet return and complete their work. But four years being the accepted time inter-

val for completing work for a degree, non-enrollment in the eighth semester was arbitrarily taken as signifying a permanent withdrawal.

Also, it should be made clear that when we state that a student was enrolled, let us say, for two semesters, it does not mean necessarily that the semesters were consecutive. He may have been in one semester, out the next, and back the following one; but he had only two semester's work in West Virginia University to his credit.

In order to answer our question, "Is intelligence as measured by this intelligence test a factor in withdrawals, and conversely in survivals?", the scores were arranged in deciles, with 44 cases in each decile except the tenth which included 41 cases.

Table I shows the number of withdrawals for each decile for each semester, and the total number and per cent for each two semesters or year equivalents. The same data is given for the entire class, and also for the five upper and the five lower deciles. Chart I shows the withdrawals as they accumulated semester by semester from the five lower deciles and the five upper deciles; it shows also the number of graduates found in the two groups.

It can be seen from Table I that before the close of the first semester, 23 students left, never to return. Of these 23, 18 were from the five lower deciles, five from the five higher deciles. Some of the students with the lower intelligence scores probably realized early in their college career their inability to maintain the academic standards of the University.

After staying for one semester, 40 more students withdrew permanently. Of these 28 were from the five lower deciles, 12 from the five upper deciles. Those in the lower deciles more than doubled those in the upper.

After staying for two semesters or having the equivalent of one year's work, 62 additional students left the ranks. Of these, 34 were from the five lower deciles, 28 from the five upper deciles. It is to be noted that there is a considerable increase in number among those with higher intelligence scores who left after two semesters than formerly.

The total of withdrawals, then, after one year's work was 125—approximately one-third of the original class number—29 per cent, to be exact. Of these 125 withdrawals, 80 are from the lower five deciles, and 45 are from the upper five deciles. This is a ratio of almost two to one. Consequently, at this stage in the academic career of the class of 1935 one might be tempted to answer the question in the affirmative and say that since two students in

TABLE I

NUMBER OF WITHDRAWALS OVER A FOUR-YEAR PERIOD IN THE DIFFERENT DECILES OF INTELLIGENCE TEST SCORES

Deciles and Range of Scores	No. Case	Before end of 1st sem.	After 1st Sem.	After 2nd Sem.	Total No. After 1 yr. wrk.	%	After 3rd Sem.	After 4th Sem.	Total No. After 2 yr. wrk.	%	After 5th Sem.	After 6th Sem.	Total No. After 3 yr. wrk.	%	After 7th Sem.	Grand Total Close 4 yrs.	%	No. Grads.	% Grads.	Range of Score
First 46–83	44	7	10	4	21	48	0	1	22	50	1	3	26	(Ran 59	ge of S 0	core) 46–83 26	59	8	18	67–83
Second 84–104	44	4	4	5	13	30	2	6	21	48	2	1	24	55	2	82–104 26	59	6	14	87–101
Third 104–122	44	4	5	9	18	41	1	4	23	52	2	1	26	59	1	104–121 27	61	10	23	105–122
Fourth 123–136	44	2	7	7	16	36	1	3	20	45	1	0	21	48	1	123–136 22	50	14	32	123–136
Fifth 136–146	44	1	2	9	12	27	2	6	20	45	2	1	23	52	0	136–146 23	52	11	25	138–144
Sixth 146–158	44	0	3	4	7	16	4	5	16	36	3	3	22	50	0	146–158 22	50	15	34	146–157
Seventh 158–173	44	2	4	6	12	27	1	4	17	39	0	0	17	39	0	158–173 17	39	14	32	159–172
Eighth 173–192	44	1	2	6	9	20	2	5	16	36	0	4	20	45	0	174–192 20	45	19	43	180–192
Ninth 193–215	44	2	2	8	12	27	2	1	15	34	0	1	16	36	0	194–213 16	36	20	45	193–214
Tenth 215–317	41	0	1	4	5	12	1	4	10	24	0	6	16	39	0	217–317 16	39	22	54	215–304
Total	437	23	40	62	125	29	16	39	180	41	11	20	211	48	4	215	49.2	139	31.8	
Lower Half	------	18	28	34	80	19	6	20	106	24	8	6	120	27.4	4	124	28.3	49	11.2	
Upper Half	------	5	12	28	45	10	10	19	74	17	3	14	91	20.8	0	91	20.8	90	20.6	

the five lower deciles withdraw to one in the five upper, the low intelligence score is the cause. At any rate, a larger percentage of low score students eliminate themselves than high score students do.

Continuing into the following year, or its equivalent, the third and fourth semesters, we note from Table I that 16 withdraw after three semesters, 6 from the five lower deciles, 10 from the five upper deciles. In this case the number from the upper half is almost twice that of the lower, which is the reverse of the previous year. After the fourth semester, there are 39 additional withdrawals; here the division is almost equal, with 20 coming from the lower half, and 19 from the upper half.

Now by the close of the fourth semester or the equivalent of the Junior College there was a total of 180 withdrawals or 41 per cent of the original enrollment. Twenty-four percent were from the five lower deciles, and 17 per cent from the five higher deciles. The ratio of the lower to the higher now becomes three to two; and the factor of low intelligence score as a cause of withdrawals is less marked than at the end of the first two semesters.

Looking into the record of the Senior College, we find there are fewer withdrawals. Evidently those (59 per cent) who have survived the Junior College settle down for a pull to the finish. With each semester the number of withdrawals now becomes fewer and fewer.

After five semester's work, 11 students withdraw; of them eight are from the lower half of the group, three from the upper half. After the sixth semester 20 additional students withdraw; six from the lower half and 14 from the upper half—so that after six semesters or three year's work the total number of withdrawals has increased to 211 or 48 per cent of the class, with 27 per cent coming from the five lower deciles and 21 per cent from the five upper deciles; thus the ratio of the lower to the higher is now approximately four to three. This ratio is maintained the following year.

During the last year or after the seventh semester there were only four withdrawals, all of them from the five lower deciles, or the lower half of the class.

The complete number of withdrawals was 215 or 49.2 per cent. This shows that practically half of the class failed to continue their work over a period of eight semesters; 28 per cent are from the five lower deciles, and 21 per cent from the five higher deciles.

CHART I

NUMBER OF WITHDRAWALS, SEMESTER AFTER SEMESTER, AND GRADUATES FROM THE FIVE UPPER AND FIVE LOWER DECILES

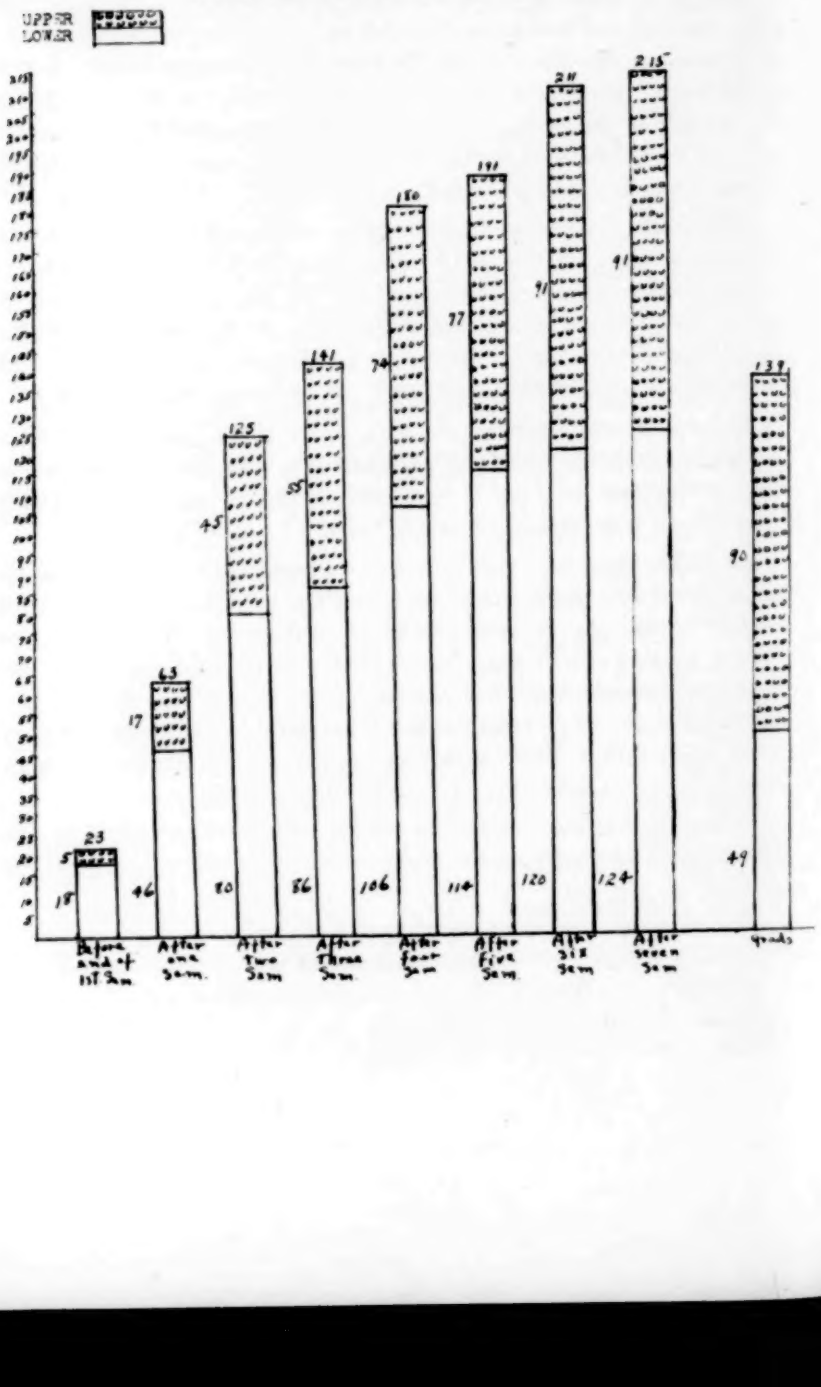


TABLE II

A COMPARISON OF THE ORIGINAL ENROLLMENT, THE WITHDRAWALS AND GRADUATES ACCORDING TO DECILES

Deciles	Original Enrollment No. Cases	Withdrawals		Graduates	
		No. Cases	Percentages	No. Cases	Percentages
First	44	26	59	8	18
Second	44	26	59	6	14
Third	44	27	61	10	23
Fourth	44	22	50	14	32
Fifth	44	23	52	11	25
Sixth	44	22	50	15	34
Seventh	44	17	39	14	32
Eighth	44	20	45	19	43
Ninth	44	16	36	20	45
Tenth	41	16	39	22	54
Total	437	215	49.2	139	31.8
Lower Half		124	28.3	49	11.2
Upper Half		91	20.8	90	20.6

Considering the withdrawals from semester to semester, it is clearly evident (Table I and Chart I) that the heaviest loss occurs after one year's work. From that time on the percentage of withdrawals grows less each year. There is also evidence from Table I that the heavier losses are after the second, fourth, and sixth semesters, which for most of the students means after one year, two years, or three years of work. In other words, they are more likely to finish out a year than to stop in the middle of a year. A third fact that stands out is that the withdrawals in the lower half of the class is heavier than that of the upper half, indicating that a larger percentage of the brighter students as judged by intelligence test scores tend to remain in school longer than the poorer students do.

However, one must not lose sight of the fact that with the passing of time more students from the upper deciles leave, thus bringing about a gradual change in the ratio of the higher to the lower deciles, so that in the end the lower half is loaded only slightly more heavily than the upper half by withdrawals. By the eighth semester an average of 42 per cent of the five higher deciles have withdrawn, as against 56 per cent from the lower, leaving an enrollment of 58 per cent as against the 44 per cent of the five lower deciles.

Thus we find still enrolled in the eighth semester 222 of the 437 students. Ninety-six of them are from the lower half of the class; in fact, 18 of the 44 from the lowest decile are still in attendance. The remaining

126 students are from the five higher deciles, this group having a majority of 30 students over the five lower decile group.

Apparently then when the whole four-year period is considered, the intelligence rating of the student is neither the only nor the main factor which makes for either withdrawal or survival.

A comparison of the original enrollment, the withdrawals and graduates according to deciles is presented in Table II.

One factor which, no doubt, operated for all students was the financial one. A number of students enter the University with the expectation of receiving NYA aid. If that is not available for them they must leave. Also some of those who withdraw enter other colleges and universities, and information concerning their future educational career is seldom available. On the other hand, several possible reasons for remaining in college regardless of intelligence rating suggest themselves. One of them is the scarcity of jobs to be had, and the belief that the possession of a college degree, regardless of one's innate ability, will secure for one a more desirable and a better job in the end. Still other students shop around and shift from one college or school or major subject to another until they find a berth where they are not too uncomfortable and where they may be able eventually to make the grade. This shifting about brought up the question of the extent of transfers.

In order to consider the transfers it was necessary to divide the group into the various colleges, schools, and pre-professional groups. Table III shows the number that go to and from the several groups. Altogether there were 48 students or 11 percent who made shifts. In several cases there was more than one transfer. For example, one boy was a pre-law student the first year; the first semester of the second year he transferred to engineering, and the second semester of the same year he left engineering and joined the pre-medical group. Another student transferred from arts and sciences to the pre-education group, and from there went to home economics. And still another who enrolled as an agriculture student shifted to pre-education for a brief stay and then transferred to arts and sciences.

These changes brought an increase of two, three, or four students to the following groups: arts and sciences, agriculture, home economics, music, physical education, and engineering and mines. The pharmacy group remained intact, neither losing nor gaining any students. The pre-education

TABLE III

TRANSFERS FROM ONE COLLEGE, SCHOOL, OR PRE-PROFESSIONAL GROUP TO ANOTHER

	TO			FROM			
College, School or Group	No. Cases	Range I T S	Mean I T S	No. Cases	Range I T S	Mean I T S	Gain or Loss in No.
Arts & Sciences	19	67–265	169	17	84–214	145	+ 2
Agriculture	5	87–180	128	3	63–194	108	+ 2
Home Economics	3	136–193	155	1	----------	156	+ 2
Music	2	110–203	157	0	----------	--------	+ 2
Pharmacy	0	----------	--------	0	----------	--------	0
Physical Education	4	60–184	111	0	----------	--------	+ 4
Pre-Education	6	101–197	142	6	130–265	190	0
Pre-Law	1	----------	168	16	93–259	155	—15
Pre-Medicine	5	121–214	165	5	87–203	159	0
Engineering & Mines	3	154–194	178	------	----------	--------	+ 3
Total	48	63–265	153. 3	48	63–265	153. 3	----------
Per Cent of Class:	11%						

group broke even, losing 6 and gaining 6 members. Losses were sustained only in the pre-law group where 16 members transferred. Ten of this group transferred to the straight arts and sciences group, one went to medicine, one to engineering, and two each to agriculture and education. This group gained only one student and he came from the arts and sciences group.

This relatively large withdrawal from the pre-law group and entrance into the other groups was in large part due to the desire to be graduated at the end of the four-year period, as 9 out of the 16 got their degrees in June 1939. The other transfers seemed to be motivated largely by individual interests and ability.

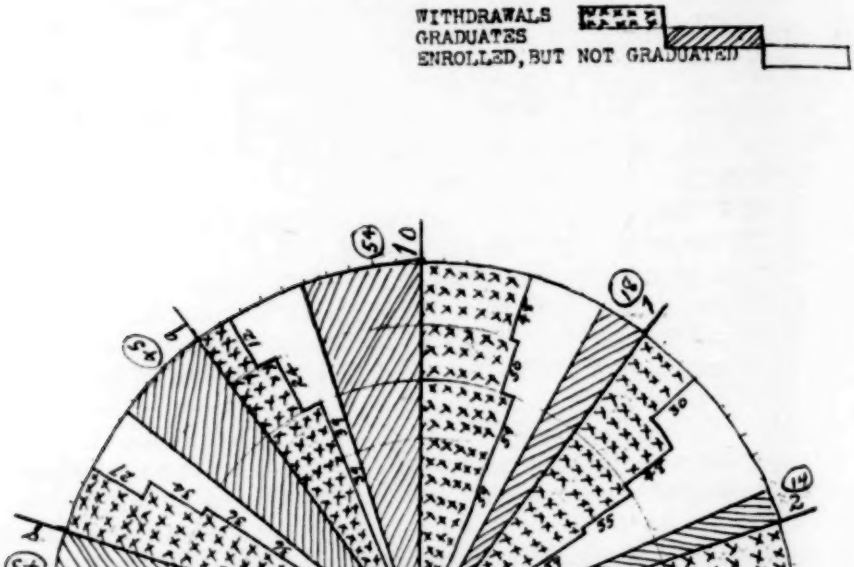
In addition to the above transfers, two of the students went to the College of Law the last year, but since there was no change in their major interest they were not considered in Table III.

WHAT PERCENT OF THE ORIGINAL GROUP COMPLETED THEIR COURSE BY THE END OF THE FOUR YEARS?

This question is answered by Table I and Chart I which show the original enrollment, the withdrawals, and graduates in terms of number and percentage. The same facts are shown on Table II and Chart II.

CHART II

PERCENTAGES OF WITHDRAWALS AFTER TWO, FOUR, SIX AND SEVEN SEMESTERS; PERCENTAGES OF GRADUATES; AND STUDENTS STILL ENROLLED BUT NOT GRADUATED IN EACH DECILE



It will be seen that 139 of the original group are graduated, or 31.8 percent. This constitutes slightly less than one-third of the class. The number corresponds roughly to the number and percentage of withdrawals after two semester's enrollment. But the difference between the two groups is striking when we consider the distribution in deciles. It can be seen from Chart I that there were almost twice as many withdrawals in the five lower deciles as there were in the five upper or higher deciles after two semester's work. With the graduates the reverse is the case. Here there are twice as many graduates from the five upper deciles as there are from the five lower deciles.

Striking as this may be, a still more striking fact is that in spite of very low intelligence test scores, a certain percentage of these students do complete their college course by the close of the four-year interval. Some few attend summer school, but in no larger number than the students with higher intelligence test scores who do so in order that they may shorten their college career.

Chart II shows that with each ascending decile there is a decrease in the percentage of withdrawals and an increasing percentage of graduates except for slight variations in the middle range. For example, let us consider the three lowest and the three highest deciles. By the end of four years 59 percent had withdrawn in the first decile and 18 percent were graduated; in the second, 59 percent had withdrawn and 14 percent were graduated; in the third, 61 percent had withdrawn and 23 percent were graduated. In the eighth decile there was a withdrawal of 45 percent and 43 percent were graduated; in the ninth, 36 percent had withdrawn and 45 percent were graduated; in the tenth 39 percent withdrew while 54 percent were graduated.

Obviously then the answer to the first part of our original question is: the lower the intelligence the more likelihood there is that the student will withdraw before obtaining a degree, and the higher the intelligence as rated by this intelligence test, the more likelihood there is that the student will finish his course in four years.

It will be noted from Chart II that in each decile there is a certain percentage of the class which has neither withdrawn nor has been graduated. These students were enrolled the eighth semester, but had not completed work sufficient for a degree. In some cases this lack was due to irregular attendance; in others, to work of such poor quality that the required number of honor points had not been earned.

IN WHAT COLLEGE, SCHOOL OR PRE-PROFESSIONAL GROUP DO THOSE WHO REMAIN IN COLLEGE SUCCEED?

Inasmuch as we find students from the lowest to the highest decile graduating within the four years, the question remains in which college, school, or pre-professional group do the students of different rank in ability, who remain in college, succeed? That is to say, do we find a preponderance of students from the upper half of the group in one college, school, or pre-professional group, and those from the lower in another?

It was thought that a study of the withdrawals from the several colleges, schools, and pre-professional groups might throw some light on this question. As shown by Table IV and Chart III, the music school experienced the largest percentage of withdrawals, its total loss by the end of the two semesters being seven out of its original group of nine or a percentage of 77. The second largest percentage of withdrawals after two semesters is found in the physical education group (34%) followed by pre-education (31%) arts and sciences (30%) home economics (28%) agriculture (26%) pre-law (25%) and pre-medicine (22%). Pharmacy had no withdrawals.

After four semesters home economics ranks second to music consistently throughout the remainder of the four years in percentage of withdrawals, ending with a loss of 67 percent of the original group.

The group to occupy the third rank consistently after the four-semester period is the arts and sciences, the total percentage of withdrawals being 57.

The lowest percentage of withdrawals following pharmacy with its perfect record of constant enrollment is found in the pre-law (27%), the pre-medicine (43%), and agriculture (44%) groups.

By the end of the four-year period fifty percent of the physical education students and those in the pre-education group had withdrawn.

Thus, the highest percentages of withdrawals are found to be in the school of music, the home economics, and the arts and science groups in the order named. (77, 67, 57%). The lowest percentages outside of pharmacy were in the pre-law, pre-medicine, and agriculture in the order named.

From the above ranking one might conclude that the students who remain in college longer are those who enter with a definite goal in mind and enroll in courses with a more or less definitely prescribed curriculum, such as pharmacy, pre-law, pre-medicine, and agriculture, regardless of their intelligence test score.

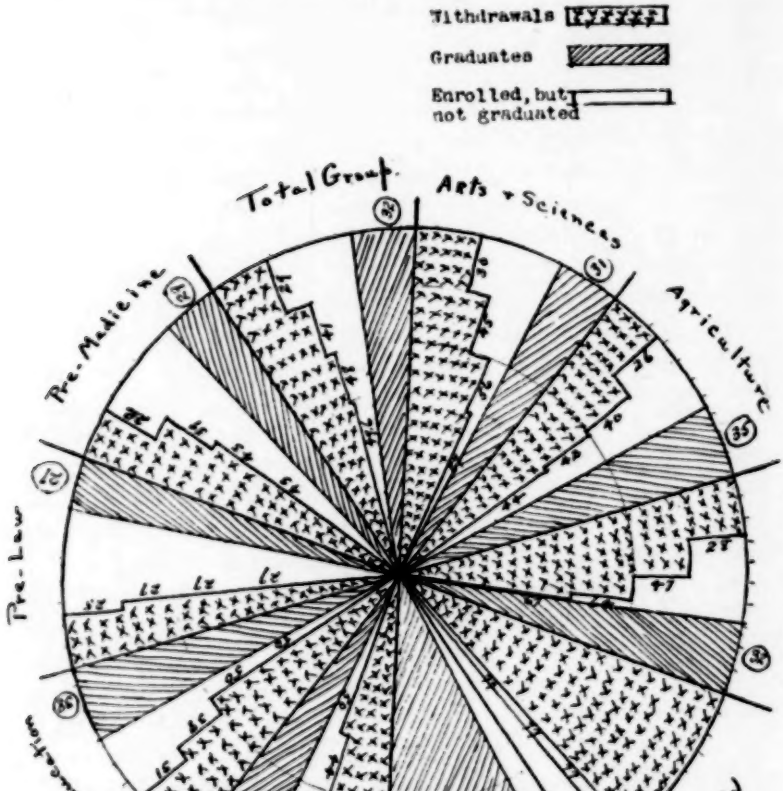
TABLE IV

WITHDRAWALS OVER A FOUR-YEAR PERIOD IN THE SEVERAL SCHOOLS, COLLEGES, AND PRE-PROFESSIONAL GROUPS

Schools, Colleges Groups	Original Enrollment	Before end of 1st Sem.	After 1st Sem.	After 2nd Sem.	Total Withdrawals after 2n. Sem.	%	After three Sems.	After four Sems.	Total Withdrawals after 4 Sems.	%	After five Sem.	After Six Sem.	Total Withdrawals after 6 Sems.	%	After 7 Sems.	Total Withdrawals for 4 yr. Period	Percent withdrawals for 4 year period
Arts and Sciences	168	6	15	30	51	30	6	18	75	45	5	14	94	56	1	95	57
Agriculture	50	4	4	5	13	26	1	6	20	40	1	0	21	42	1	22	44
Home Economics	36	0	3	7	10	28	4	3	17	47	2	4	23	64	1	24	67
Music	9	3	3	1	7	77	0	0	7	77	0	0	7	77	0	7	77
Pharmacy	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Physical Education	32	5	3	3	11	34	2	1	14	44	0	0	14	44	1	15	50
Pre-Education	16	1	1	3	5	31	0	1	6	38	1	1	8	50	0	8	50
Pre-Law	48	3	3	6	12	25	0	1	13	27	0	0	13	27	0	13	27
Pre-Medicine	72	1	8	7	16	22	3	9	28	39	2	1	31	43	0	31	43
Total	437	23	40	62	125	29	16	39	180	41	11	20	211	48	4	215	49.2
Range I. T. S.		47-205	40-220	76-317	46-317	------	84-217	78-312	46-317	------	61-151	64-786	46-317	------	99-123	46-317	------
Mean I. T. S.		114.4	124.2	146	------	------	155	152	------	------	107	178	------	------	88.6	134	------

CHART III

PERCENTAGES OF WITHDRAWALS AFTER TWO, FOUR, SIX AND SEVEN SEMESTERS; PERCENTAGES OF GRADUATES; AND STUDENTS STILL ENROLLED BUT NOT GRADUATED IN THE SEVERAL COLLEGES, SCHOOLS AND PRE-PROFESSIONAL GROUPS AND THE TOTAL GROUP



The larger percentage of withdrawals from music and home economics might be explained on the basis that students who show a little native flare for that specialized work become discouraged when they discover they must meet certain academic requirements outside their special field of talent and for that reason withdraw. A like demand might explain the 50 percent withdrawals in the physical education and pre-education groups.

The relatively large percentage of withdrawals from the arts and sciences group is not surprising since within its ranks are many students without any definite goal, other than to go to college until something better turns up; some are drifters in the academic world; some are ambitious to have a degree, but have no special aim beyond, other than to obtain a job of some kind. In the case of the girls, it is often marriage, which may also account in part for the withdrawals in home economics and music.

While it is true there is a larger percentage of withdrawals in some groups than in others, which fact is evident from Table IV and Chart III, still with the exception of the highest (music) and the lowest (pharmacy) which include a very small number of cases, there are withdrawals from all divisions ranging from 27 percent in the pre-law group to 67 percent in the home economics group. One is forced then to conclude that no special divisions are responsible for the withdrawals or survivals since both occur in all divisions.

We then turn to the list of graduates to discover the percentage from each division who attain their degrees within the four years.

Table V shows that with the exception of the two small groups, pharmacy and music, the differences in percentages is not great. Barring the above-mentioned groups, the percentage graduating in each group is within the 30's with the exception of the pre-law and pre-medicine groups which are not far behind—27 and 29 percent respectively.

Apparently, then, both withdrawals and graduates are fairly well distributed throughout the different divisions of the university and not concentrated anywhere.

In order to probe somewhat deeper into the problem of where the students who remain in college succeed, Table VI was constructed. This table gives the range and mean score for students in each of the several colleges, schools, and pre-professional groups for both the withdrawals and those who graduate, also for the total group.

TABLE V

GRADUATES WITHIN THE FOUR-YEAR PERIOD FROM THE DIFFERENT COLLEGES, SCHOOLS, AND PRE-PROFESSIONAL GROUPS IN TERMS OF NUMBER AND PERCENTAGE OF THE ORIGINAL CLASSIFICATION AND THE FINAL GROUPING

	Original Enrollments	No. of Original Enrollment Graduated	%	Total Enrollment After Transfers	No. Graduating	% Graduating
Arts and Sciences	168	40	24	170	53	31
Agriculture	50	17	34	52	18	35
Home Economics	36	10	28	38	12	32
Music	9	2	22	11	2	18
Pharmacy	6	5	83	6	5	83
Physical Education	32	11	34	36	13	36
Pre-Education	16	3	19	16	6	38
Pre-Law	48	8	17	33	9	27
Pre-Medicine	72	17	24	72	21	29
Engineering and Mines				3		
Total	437	113	26	437	139	31.8

In general, as can be seen from Table VI, those students with the lower intelligence test scores drop out first, and with the succeeding semesters, there is a general rise in the mean intelligence test score for the group as a whole during the Junior College enrollment. In the Senior College there is considerable fluctuation, both in the number and the test scores of those who withdraw.

Considering the range in score for the total withdrawals in each division (Table VI), we find the greatest range in the arts and science group where the highest (317) and the lowest (46) are located, a difference of 271 points; the next highest range is in pre-law, from 71 to 260 or a difference of 189, following in rank order are home economics, from 68 to 248, a difference of 180; agriculture, from 47 to 194, a difference of 147; pre-medicine, from 91 to 210, a difference of 119; music, from 77 to 194, a difference of 117; pre-education, from 83 to 200, a difference of 117; and physical education, from 72 to 163, a difference of 91. This wide range shows that students with scores ranging from the lower to the higher deciles withdraw from all divisions.

TABLE VI

RANGE AND MEAN OF INTELLIGENCE TEST SCORES FOR WITHDRAWALS IN THE SEVERAL COLLEGES, SCHOOLS, AND PRE-PROFESSIONAL GROUPS FOR SUCCESSIVE SEMESTERS—AND FOR GRADUATES

College, School, Etc.	No.	Before End of 1st Sem.	No.	After One Sem.	No.	After Two Sem.	No.	After Three Sem.	No.	After Four Sem.	No.	After Five Sem.	No.	After Six Sem.	No.	After Seven Sem.	No.	Total Withdrawals	No.	Grads. After Transfer
A. & S.	6	91–165 117	15	46–220 119	30	76–317 155	6	137–217 183	18	78–312 164	5	61–151 117	14	64–286 166	1	99	95	46–317 135	53	67–268 181
Agriculture	4	47–194 109	4	53–170 122	5	94–174 134	1	102	6	91–180 126	1	137	0	-------	1	101	22	47–194 121.6	18	73–221 142.6
Home Econ.	0	-------	3	68–89 79	7	82–218 116	4	110–201 148	3	136–175 152	2	87–99 93	4	79–248 166	1	120	24	68–248 127.6	12	96–266 171.2
Music	3	77–183 141	3	84–194 154	1	172	0	-------	0	-------	0	-------	0	-------	0	-------	7	77–194 151	2	106–154 130
Pharmacy	0	-------	0	-------	0	-------	0	-------	0	-------	0	-------	0	-------	0	-------	0	-------	5	88–207 136
Physical Education	5	76–112 96	3	72–113 87	3	118–134 123	2	84–163 124	1	132	0	-------	0	-------	1	123	15	72–163 107.5	13	75–196 135
Pre-Education	1	134	1	83	3	98–200 197	0	-------	1	155	1	104	1	141	0	-------	8	83–200 126.4	6	101–186 164.3
Pre-Law	3	78–205 121	3	99–170 135	6	71–260 148	0	-------	1	148	0	-------	0	-------	0	-------	13	71–260 139.5	9	119–210 176.3
Pre-Medicine	1	91	8	102–202 156	7	118–210 172	3	137–155 148	9	103–196 145	2	140–146 143	1	156	0	-------	31	91–210 152.7	21	77–271 153.6
Total Mean I.T.S.	23	47–205 114.4	40	46–220 124.3	62	71–317 148	16	84–217 135	39	78–312 152	11	61–151 107	20	64–286 178	4	99–123 88.6	215	46–317 134	139	67–268 167.4

The mean scores of the withdrawals in the different divisions are also shown on Table VI. They range from 107.5 for the physical education group to 152.7 for the pre-medical group, a difference from the lowest to the highest of 45.2 points, with a mean score of 134 for the total withdrawals. This variability between the different divisions is far less than the variability within each group; consequently it fails to point to any one group as responsible for withdrawals because of low intelligence test scores.

Now let us turn to the column of Table VI which gives the number of graduates in each division, the range of score and mean score for each. Here we find again the greatest range is in the arts and science group, from 67 to 268, a difference of 201; the lowest range is in the music school, but there are only two cases (106–154), consequently, there could scarcely be said to be a range. The most restricted groups are in pre-education and pre-law, where the respective ranges are from 101 to 186, a difference of 85 for pre-education and from 119 to 210, a difference of 91 for pre-law. On the whole the differences are similar in magnitude to those of the withdrawals, and it is obvious that a low intelligence test score does not prevent one from graduating in any college, school, or division.

When the mean scores of the withdrawals and those who graduate are compared, it can be seen that in every case except music the mean score of graduates is higher than the mean score of withdrawals. The mean score for the total group of graduates is 167.4 as against 134 for the withdrawals, which is an increase of 33.4 points over the latter.

Table VII shows the comparison of the mean scores of the withdrawals and graduates.

TABLE VII

	Withdrawals	Rank	Graduates	Rank	Point Gain or Loss
Arts and Sciences	135	4	181	2	46
Agriculture	121. 6	7	142. 6	6	21
Home Economics	127. 8	6	171. 2	4	43. 4
Music	151	2	130	9	—21
Pharmacy			136	7	
Physical Education	107. 5	8	135	8	27. 5
Pre-Education	128. 4	5	164. 3	5	35. 9
Pre-Law	138. 5	3	176. 3	3	37. 8
Pre-Medicine	152. 7	1	183. 6	1	30. 9

It can be seen from the above that in all divisions the mean score of the graduates exceeds that of the withdrawals except in music. In the case of arts and sciences and home economics groups the mean score of the graduates exceeds that of the withdrawals by as much as forty points.

Among the graduates the most intelligent group as measured by intelligence tests is the pre-medical, with a mean score of 183.6. Next in order come the arts and sciences, the pre-law, the home economics, and the pre-education groups, all with scores above the mean score of the total original enrollment which was 149.5. Below the class mean we find the agriculture, pharmacy, physical education and music groups.

Once again it should be pointed out that the pharmacy and music groups have too few cases to make a statistical statement concerning them valid. If those two are eliminated we find that the agriculture and physical education groups fall below the class average. Since it does seem possible for students with relatively lower intelligence test scores to graduate in those two schools, one might expect to find the majority of such students registered there, but such is not the case as shown by all the tables.

CONCLUSIONS

What general conclusions can be drawn from the study of attendance and graduation in relation to the intelligence test score of entering freshmen?

1. Almost half of the entering students withdraw before the end of 4 years, so of course do not graduate.

2. The withdrawals each semester show a slightly larger percentage come from those in the five lower deciles of intelligence test scores; however, the ratio of the lower to the upper gradually changes from a two to one at the end of two semesters, or one year's work, to a four to three ratio at the end of four years.

3. The larger percentage of withdrawals occurs by the end of the Junior College. A much smaller percentage occurs in the Senior College.

4. Forty-four percent of the students from the lower half of the class, so far as intelligence test scores are concerned remain in college in spite of the weeding-out process that has taken place on the Junior College level and the heavy withdrawal from the lower ranks after two semester or the equivalent of one year's work. Fifty-eight percent of the students from the upper half of the class continue their course over a four-year period.

5. Almost one-third of the class graduate.

6. The higher the decile the greater the number of students who complete their work within the four-year period. Approximately one-third of the graduates are from the five lower deciles; two-thirds from the five upper deciles.

7. When the group is divided into the several colleges, schools, and pre-professional groups, the percentage of withdrawals in each is quite similar, with the exception of the pharmacy and music school students, where the enrollment is too low to be of any statistical value.

8. There seems to be a somewhat greater survival of students in those divisions which have a more definitely prescribed curriculum than in those where the student is given a freer choice in his selection of courses.

9. There is a wide range of intelligence test scores in all divisions both for the withdrawals and for the graduates.

100. The mean scores for the graduates in all divisions (except music) is higher than the mean scores for the withdrawals, so in general, one can say a larger percentage of students with higher intelligence test scores graduate than do those with lower ones, and conversely that a larger percentage of those with lower intelligence test scores withdraw from the university than do those with higher intelligence test scores.

11. Among the graduates the higher intelligence test scores are found in the pre-professional groups, arts and sciences, and home economics—all being above the class average. The lower intelligence test scores are found in the agriculture and physical education groups, both being below the class average.

12. From the above one might conclude that one would not be justified in telling any student with a low intelligence test score that he would not be able to graduate from West Virginia University because, in spite of low intelligence test scores, some do graduate. Even in the lowest decile the chances are approximately three to seven that he will, according to the records of this class.

SURVEY OF EIGHTH-GRADE GRADUATES OF 1940

MARSHALL CANAAN
Sauk County, Wisconsin

Editor's note: As a part of the program to bring the school in closer harmony with the every day life needs of pupils are the follow-up studies now common. The author presents data on a county wide follow-up study of eighth grade graduates.

ON SEPTEMBER 1, 1940, a follow-up questionnaire was prepared and sent out to the Sauk County teachers in the one hundred fifteen rural schools, four state graded schools (second class), one school considered as grades below high school, the County Normal demonstration school, and one parochial school,—making a total of one hundred twenty-two schools that had pupils who were given an eighth-grade diploma as a result of having successfully passed the county achievement tests.

Each questionnaire contained the pupils' names and ages as of May 18, 1940, and the following questions:

1. Is the pupil in high school? Where?
2. If not, what is the pupil doing?
3. What is the distance to the nearest high school? Where?

Out of the one hundred twenty-two questionnaires that were sent out 100 percent of them were returned on or before October 4, 1940, with the necessary information.

PURPOSE OF SURVEY

This questionnaire was formulated and sent out for the purpose of getting the following information: (a) the number and percent of boys and girls entering high school and how the groups from various sources compared with each other; (b) how the number of over-age pupils that entered high school compared with the number of under-age pupils; (c) the number of pupils who entered high school from the twenty-two towns compared with other types of schools mentioned; (d) reasons for some pupils not enrolled in high school; (e) to find out whether or not distance had anything to do with pupils not attending high school. The writer also wished to compare the above factors for the different types of schools,—rural, state graded, County Normal demonstration room, one school considered as grades below high school, and a parochial school.

TABLE I

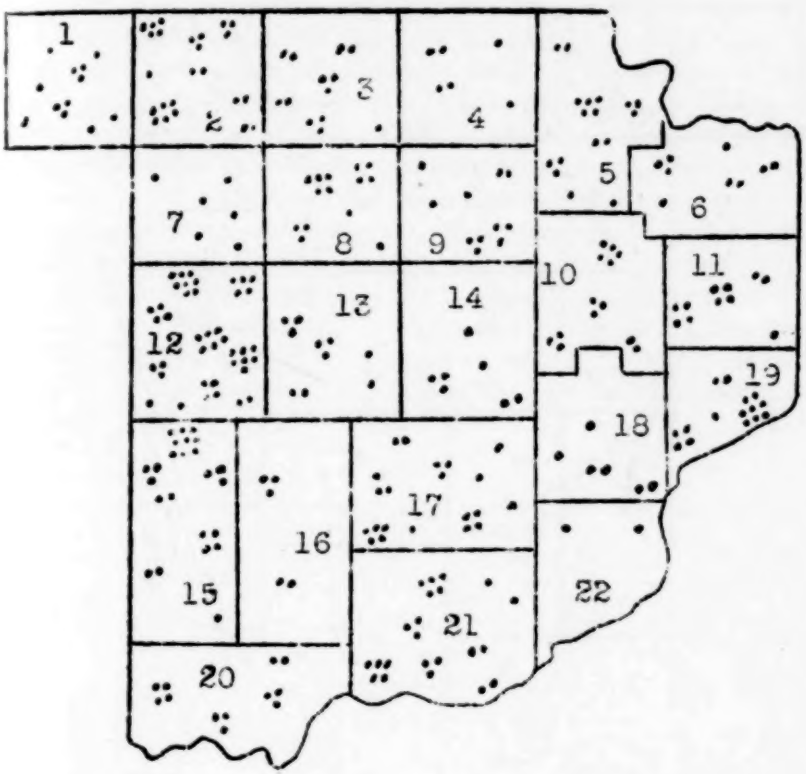
SHOWING DISTRIBUTION OF 263 PUPILS FROM 115 RURAL SCHOOLS AND 39 PUPILS FROM OTHER TYPES OF SCHOOLS

115 schools out of 139 had graduates TOWN	8th Grade Graduates			In H. S.			Per Cent in H. S.	Not in H. S.			Per Cent not in H. S.
	B	G	T	B	G	T		B	G	T	
RURAL											
Baraboo	7	6	13	7	6	13	100.0*				
Bear Creek	12	13	25	8	12	20	80.0	4	1	5	20.0
Dellona	1	5	6	1	4	5	83.4		1	1	16.6
Delton	8	4	12	5	2	7	58.3	3	2	5	41.7
Excelsior	6	5	11	5	3	8	72.7	1	2	3	27.3
Fairfield	4	5	9	1	4	5	55.6	3	1	4	44.4
Franklin	3	2	5		2	2	40.0	3		3	60.0
Freedom	1	6	7	1	6	7	100.0*				
Greenfield	4	3	7	1	3	4	57.1	3		3	42.9
Honey Creek	7	14	21	5	10	15	71.4	2	4	6	28.6
Ironton	2	4	6	2	4	6	100.0*				
La Valle	13	5	18	10	4	14	77.8	3	1	4	22.2
Merrimack	2	5	7	1	5	6	85.7	1		1	14.3
Prairie du Sac	1	1	2	1	1	2	100.0*				
Reedsburg	3	6	9	1	4	5	55.6	2	2	4	44.4
Spring Green	8	4	12	6	2	8	66.7	2	2	4	33.3
Sumpter	4	2	6	3	2	5	83.4	1		1	16.6
Troy	12	10	22	10	9	19	86.4	2	1	3	13.6
Washington	20	13	33	15	9	24	72.7	5	4	9	27.3
Westfield	3	4	7	1	3	4	57.1	2	1	3	42.9
Winfield	6	7	13	5	5	10	76.9	1	2	3	23.1
Woodland	4	8	12	2	6	8	66.7	2	2	4	33.3
	131	132	263	91	106	197	74.9	40	26	66	25.1
STATE GRADED											
Delton	3	2	5	3	1	4	80.0		1	1	20.0
Glenville	3	1	4	3	1	4	100.0*				
Loganville	3	0	3	2	0	2	66.7	1		1	33.3
Merrimack	2	6	8	2	6	8	100.0*				
	11	9	20	10	8	18	90.0	1	1	2	10.0
OTHER SCHOOLS											
Lime Ridge	6	2	8	6	2	8	100.0*				
Sauk Co. Normal	3	2	5	3	2	5	100.0*				
St. Paul Lutheran (Town of La Valle)	2	4	6	2	3	5	83.3		1	1	16.7
	11	8	19	11	7	18	94.7		1	1	5.3
Total	153	149	302	112	121	233	77.1	41	28	69	22.9

FIGURE 1

SHOWING DISTRIBUTION OF 302 GRADUATES

(Each dot represents *one* pupil.)

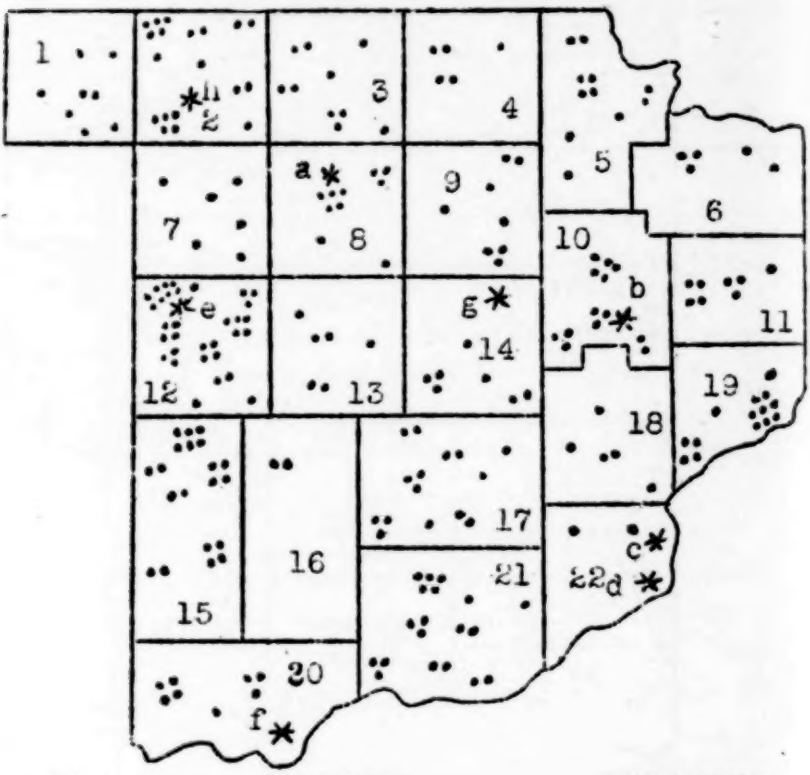


1. Woodland
2. La Valle
3. Winfield
4. Dellona
5. Delton
6. Fairfield
7. Ironton
8. Reedsburg
9. Excelsior
10. Baraboo
11. Greenfield
12. Washington
13. Westfield
14. Freedom
15. Bear Creek
16. Franklin
17. Honey Creek
18. Sumpter
19. Merrimack
20. Spring Green
21. Troy
22. Prairie du Sac

FIGURE 2

SHOWING DISTRIBUTION OF 233 PUPILS IN HIGH SCHOOL

(Each dot representing one pupil. Each star (*) represents High Schools and State Graded School in County attended by majority of pupils.)



1. Woodland
2. La Valle
3. Winfield
4. Dellona
5. Delton
6. Fairfield
7. Ironton
8. Reedsburg
9. Excelsior
10. Baraboo
11. Greenfield
12. Washington
13. Westfield
14. Freedom
15. Bear Creek
16. Franklin
17. Honey Creek
18. Sumpter
19. Merrimack
20. Spring Green
21. Troy
22. Prairie du Sac

HIGH SCHOOLS

a. Reedsburg
b. Baraboo
c. Prairie du Sac
d. Sauk City
e. Lime Ridge
f. Spring Green
g. North Freedom
h. La Valle State Graded

* High schools in which the majority of high school pupils are enrolled.

EXPLANATION OF TABULATED DATA

General information relative to the 263 eighth-grade graduates from rural schools (131 boys and 132 girls) and 39 graduates (18 boys and 21 girls) from other schools mentioned, with the number of boys and girls who enrolled in high school and those who are not in high school are shown in Table I. It is interesting to note that four towns have 100 percent of their graduates in high school, namely, Baraboo, Freedom, Ironton, and Prairie du Sac. Among the other types of schools that have 100 percent of their graduates in high school are Glenville, Merrimack, Lime Ridge, and the County Normal demonstration room. In Figure 1 will be found a map of Sauk County which shows the distribution of eighth-grade graduates throughout the county; and in Figure 2 will be found another map showing the distribution of eighth-grade graduates who have enrolled in high school.

From the data presented (Table II) it appears that 74.9 percent of the rural boys and girls are enrolled in high school (69.5 percent of the boys and 80.3 percent of the girls). For all the schools, 77.1 percent of the 302 pupils are in high school (73.2 percent of the boys and 81.2 percent of the girls).

TABLE II

SHOWING DISTRIBUTION OF PUPILS EXPRESSED IN PER CENT FROM ALL TYPES OF SCHOOLS AND FINAL AVERAGE

No.	Type of School	Per Cent in High School			Per Cent Not In High School		
		Boys	Girls	Total	Boys	Girls	Total
115	Rural	69.5	80.3	74.9	30.5	19.7	25.1
4	State Graded	90.0	88.8	90.0	9.1	11.2	10.0
1	Lime Ridge	100.0	100.0	100.0			
1	Sauk County Normal	100.0	100.0	100.0			
1	St. Paul Lutheran	100.0	75.0	83.3		25.0	16.7
122	Average	73.2	81.2	77.1	26.8	18.8	22.9

The data relative to the chronological ages (C. A.'s) of all pupils grouped in intervals of six months are shown in Table III. The oldest boy is 18 years four months, and the youngest is 12 years seven months, making a range of five years nine months; the oldest girl is 16 years nine months and the youngest is 12 years seven months, making a range of four years two months. The median age for the boys is 14 years four months and for

the girls 14 years one month. In looking at Table III it will be noted that only one pupil (boy) for the age group from the age of 18 years four months to 15 years 11 months is enrolled in high school. It is interesting to know that all 17 pupils (seven boys and 10 girls) whose ages range from 13 years three months to 12 years seven months are enrolled in high school. For schools other than rural schools (Table III–B) the oldest boy is 16 years and the youngest 12 years eight months, making a range of three years four months, and the oldest girl is 15 years eight months and the youngest 12 years five months, making a range of three years three months. The median for the boys is 13 years 10 months and for the girls 14 years one month.

TABLE III

SHOWING DISTRIBUTION OF CHRONOLOGICAL AGES (YEARS–MONTHS) OF 263 PUPILS FROM RURAL SCHOOLS AND 39 PUPILS FROM THE SEVEN OTHER SCHOOLS

(Grouped in intervals of *six months*.)

A. RURAL SCHOOLS

	C. A. (Yr.–Mo.)	8th Grade Graduates			In H. S.			Not in H. S.		
		B	G	T	B	G	T	B	G	T
	18–4	1	------	1	------	------	------	1	------	1
	16–11 to 16–6	3	1	4	1	------	1	2	1	3
	16–5 to 16–0	2	3	5	------	------	------	2	3	5
	15–11 to 15–6	11	6	17	5	4	9	6	2	8
	15–5 to 15–0	17	13	30	8	9	17	9	4	13
	14–11 to 14–6	23	21	44	15	17	32	8	4	12
	14–5 to 14–0	33	35	68	30	30	60	3	5	8
	13–11 to 13–6	31	27	58	23	22	45	8	5	13
	13–5 to 13–0	6	22	28	5	20	25	1	2	3
	12–11 to 12–6	4	4	8	4	4	8	------	------	------
Total		131	132	263	91	106	197	40	26	66
Highest C. A.		18–4	16–9	18–4	16–11	15–11	16–11	18–4	16–9	18–4
Median		14–4	14–1	14–3	14–7	14–2	14–6	15–0	14–6	14–10
Lowest C. A.		12–7	12–9	12–7	12–7	12–9	12–7	13–4	13–4	13–4
Range		5–9	4–0	5–9	4–4	3–2	4–4	5–0	5–5	5–0

TABLE III—Continued

SHOWING DISTRIBUTION OF CHRONOLOGICAL AGES (YEARS–MONTHS) OF 263 PUPILS FROM RURAL SCHOOLS AND 39 PUPILS FROM THE SEVEN OTHER SCHOOLS

(Grouped in intervals of *six months.*)

B. SEVEN OTHER SCHOOLS

	C. A. (Yr.–Mo.)	8th Grade Graduates			In H. S.			Not in H. S.		
		B	G	T	B	G	T	B	G	T
	16–0	1	------	1	1	------	1	------	------	------
	15–11 to 15–6	1	4	5	1	3	4	------	1	1
	15–5 to 15–0	------	2	2	------	2	2	------	------	------
	14–11 to 14–6	2	2	4	1	2	3	1	------	1
	14–5 to 14–0	4	6	10	4	5	9	------	1	1
	13–11 to 13–6	5	3	8	5	3	8	------	------	------
	13–5 to 13–0	3	3	6	3	3	6	------	------	------
	12–11 to 12–6	2	------	2	2	------	2	------	------	------
	12–5	------	1	1	------	1	1	------	------	------
Total		18	21	39	17	19	36	1	2	3
Highest C. A.		16–0	15–8	16–0	16–0	15–8	16–0	14–9	15–6	15–6
Median		13–10	14–1	14–1	13–9	14–1	13–11	14–9	14–11	14–9
Lowest C. A.		12–8	12–5	12–5	12–8	12–5	12–5	14–9	14–4	14–4
Range		3–4	3–3	3–7	3–4	3–3	3–7	------	1–2	1–2

The distribution of all 233 pupils in fifteen different high schools is shown in Table IV. Eight of these are located within the county, and seven of them outside.

The reasons for the 69 pupils not attending high school are shown in Table V. Twenty-nine boys out of forty-one are working on their fathers' farms, and eighteen girls out of the twenty-eight are working at home. The other reasons given are practically the same as those given above.

The data in Table VI show the distance from the nearest high schools the 69 pupils live and who are not enrolled in high school.

TABLE IV

SHOWING DISTRIBUTION OF 233 PUPILS AMONG THE 15 HIGH SCHOOLS IN WHICH THEY ARE ENROLLED

(The starred (6) High Schools are located in Sauk County)

High School	Rural			Four State Graded			Lime Ridge			Sauk County Normal			St. Paul Lutheran			Total
	B	G	T	B	G	T	B	G	T	B	G	T	B	G	T	
*Reedsburg	19	18	37	2		2				3	2	5				44
*Baraboo	14	16	30	4	4	8										38
*Prairie du Sac	14	20	34	1		1										35
*Lime Ridge	13	13	26				2	6	8							34
*Spring Green	10	12	22													22
Wonewoc	6	6	12										2	3	5	17
Wisconsin Dells	4	3	7	3	1	4										11
*Sauk City	2	4	6		3	3										9
Lone Rock	6	2	8													8
*North Freedom	1	6	7													7
*La Valle	2	2	4													4
Cazenovia		1	1													1
Platteville	1		1													1
Miltonvale, Kansas		1	1													1
Stroudsburgh, Penn.	1		1													1
	93	104	197	10	8	18	2	6	8	3	2	5	2	3	5	233

TABLE V

SHOWING REASONS FOR THE 66 PUPILS FROM RURAL SCHOOLS AND THE 3 PUPILS FROM THE OTHER SCHOOLS NOT ATTENDING HIGH SCHOOL

RURAL
(66 pupils)

Boys		Girls	
Working on father's farm	28	Working at home	18
Staying at home	5	Working out	5
Working out	4	Staying at home	2
No reason given	2	Moved away	1
Working on grandfather's farm	1		
	40		26

SEVEN OTHER SCHOOLS
(3 pupils)

Working on father's farm	1	Staying at home	2
Total	41	Total	28

TABLE VI

SHOWING DISTRIBUTION OF THE 69 PUPILS NOT ENROLLED IN HIGH SCHOOL ACCORDING TO THE DISTANCE THEY LIVE FROM THE NEAREST HIGH SCHOOL

DISTANCE	RURAL (66 pupils)			OTHER 7 SCHOOLS (3 pupils)			ALL SCHOOLS (69 pupils)		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
16 miles	2		2				2		2
15 miles	1		1				1		1
14 miles		2	2					2	2
13 miles	2		2				2		2
12 miles									
11 miles									
10 miles	6	2	8		1	1	6	3	9
9.5 miles		1	1					1	1
9 miles		2	2					2	2
8 miles	4	1	5	1		1	5	1	6
7.5 miles		2	2					2	2
7 miles	2	3	5				2	3	5
6.5 miles	1	1	2				1	1	2
6 miles	5	6	11				5	6	11
5.5 miles	1		1				1		1
5 miles	5	1	6		1	1	5	2	7
4 miles	3		3				3		3
3.5 miles	3		3				3		3
3 miles	2	4	6				2	4	6
2.5 miles	1		1				1		1
2 miles	2	1	3				2	1	3
Total	40	26	66	1	2	3	41	28	69

CONCLUSIONS

The findings or conclusions made from the questionnaire returns are as follows:

1. A good majority of the pupils from rural schools and from the other seven schools are enrolled in high school. This appears to indicate that: (a) the pupils are not kept home for work, (b) parents are willing to finance whatever expenses are necessary to enable pupils to attend high school, (c) parents and pupils realize and appreciate that education cannot end with the completion of eighth-grade work.

2. There are eight graduates from rural schools and whose chronological ages range from 15 years eleven months to 18 years four months. Out of this number, only one pupil (boy) is enrolled in high school. It appears there may be learning difficulties or because of their chronological ages and perhaps size, there may be inferiority complexes or parents may feel these pupils ar needed at home for work since the majority of them live on farms. It appears, too, that pupils have the urge to seek employment even though the salary or wages may be small.

3. All seventeen pupils (seven boys and 10 girls) from rural schools whose ages range from 12 years seven months to 13 years three months are enrolled in high school. It appears that these pupils have a high intelligence quotient (I.Q.) since their chronological ages (C.A.) are lower than that of the average eighth-grade pupil.

4. The data show that a larger percent of girls than boys from rural schools are in high school. This may appear to be due to: (a) less home work on the farms for girls, (b) the highest age and range of ages are less for the girls than for the boys.

5. In comparing the reasons why the 41 boys and 28 girls are not in high school there appears to be a close correlation, as the outstanding reason given for both groups is *work*,—the boys on the farm and the girls in the home.

6. A comparison of the pupils from the rural schools with the pupils from the seven others not enrolled in high school shows that a large percent of the village children are not employed on farms or in their homes and that perhaps parents are better able to finance and keep their children in high school.

7. It appears that the pupils who are not enrolled in high school are not handicapped because of distance since the median or average for all pupils from the nearest high school is six and five-tenths miles. The greatest distance for two pupils is 16 miles and the smallest distance for three pupils is two miles.

8. The median chronological age (C.A.) for all pupils enrolled in high school is 14 years six months with a range of four years and four months; and the median for those not enrolled in high school is 14 years 10 months with a range of five years. It appears that the C.A. and a lesser range determine to some extent whether or not pupils are enrolled in high school.

9. The distribution of pupils for all schools is among fifteen high schools. The largest number is enrolled at Reedsburg which is situated in the north central part of Sauk County and is in a position to draw students from the north, south, east, and west. Baraboo is located in the east central part of the county and Prairie du Sac in the south eastern part, and thus these two schools depend largely upon pupils from the north east half and south east half, respectively. Lime Ridge is located in the western part of the county and Spring Green in the extreme south western part. All other high schools named (except the last three listed) are in neighboring counties and these schools border close to Sauk County. It appears that the distribution of pupils among the various schools depends somewhat upon the geographical location of high schools. (See Table I, Figure B.)

10. Since the chronological age (C.A.) seems to be a determining factor for pupils not enrolled in high school, there appears to be a need for vocational courses in lieu of high school work, especially for the boys who are interested in phases of farm work, shop work, etc.

11. In the final analysis, there appears to be evidence that the teaching staff of Sauk County has done much to interest the boys and girls in attending high school and in helping them to see the need for becoming prepared for some profession or vocation in order to earn a living and to become useful citizens in their communities.

Sauk County—1940

OFFICE OF COUNTY SUPERINTENDENT OF SCHOOLS
Baraboo, Wisconsin

FOLLOW-UP QUESTIONNAIRE—EIGHTH GRADE GRADUATES
(Rural and State Graded)

School _____ Dist. No. _____ Town _____

NAME OF GRADUATE	EXACT AGE (Yr.-Mo.) (May exam)	IS PUPIL IN HIGH SCHOOL? WHERE?	IF NOT, WHAT IS PUPIL DOING?	DISTANCE TO NEAREST HIGH SCHOOL? WHERE?

Please mail to the office with your Enrollment Blank on or before October 4 unless the supervisor asks for it on the first visit.

THE EFFECT OF BI-LINGUALISM ON COLLEGE GRADES

M. V. MARSHALL and R. H. PHILLIPS
Franklin and Marshall College

Editor's note: Learning is conditioned by many factors. The author finds that Bilingualism does not effect college success.

THE effect of bi-lingualism on intelligence and school adjustment was studied by Pintner and Arsenian[1] and found to be of little or no significance. The same problem was also studied by Mitchell[2] and by Arsenian.[3]

The present study was not concerned with the effect of bi-lingualism on intelligence, *per se,* but with its effect on college grades. Forty college students, drawn from all four classes, who were capable of speaking and understanding another language in addition to English were paired with forty students who possessed facility in English only. Pairing was done on the bases of college class, score in the American Council Psychological Examination given at entrance to college, and score on the Shepherd English Test given at entrance to college. All students were men. Eleven different languages were represented by the bi-lingual group.

The record of all grades of all eighty students was then obtained and the means and standard deviations for both groups computed. The following table summarizes the data:

		Bilinguals	Monolinguals
Number		40	40
Psychological Examination	Mean	98.9	101.9
	S. D.	33.4	32.3
Shepherd English Test	Mean	86.8	85.0
	S. D.	19.6	18.0
College Grades	Mean	1.90	1.93
	S. D.	.707	.717
	Range	.70–3.24	.71–3.56

The obvious conclusion is that bi-lingualism does not affect success in college. It may be objected, of course, that by pairing on the basis of intelligence and English the significant effect of bi-lingualism had been ruled

[1] Pintner, R. and Arsenian, S., "The Relation of Bilingualism to Verbal Intelligence and School Adjustment," *Journal of Educational Research,* XXXI (December, 1937), p. 255–263.

[2] Mitchell, A. J. The Effect of Bilingualism in the Measurement of Intelligence. El. Sch. Jour., 38: 29–37.

[3] Arsenian, S. Bilingualism and Mental Development. 1937. Teachers College.

out. This is partly answered by referring to the study of Pintner and Arsenian which showed that the correlation between bi-lingualism and intelligence is practically zero. Moreover, the results do, within the limited scope of the study, give a factual answer to the plausible explanation for poor college work that a "certain student is really a bright boy but has a language handicap because of his bi-lingualism."

EDITORIAL

EDUCATIONAL RESEARCH AND THE PUBLIC SCHOOL

NOT long ago in a regional research meeting the question came up as to why the results of research had not been used more widely in the public school. In the discussion which followed several answers were proposed. Among these were, (1) field workers lack training in quantitative thinking, (2) the administrators and supervisors are failing to bring the results of research before the teachers, (3) the administration or the community does not permit controlled experimentation or experimental innovation, (4) the reports of research are, on the whole, dull and abstruse, and—though begging the question—, (5) the inertia of the public school is a desirable and necessary safeguard against the use of poorly tested hypotheses and techniques.

It is rather obvious that educational research has failed and is failing to affect the public school as much as it should. The writer recently interviewed about thirty prospective elementary and secondary teachers. Not one of the elementary teachers had heard of New York's six year experiment with the activity program, and only two secondary school teachers had heard of the eight year study of college entrance requirements in the thirty cooperating high schools. Yet, for several years these two experiments have been widely referred to in the magazines, and out of them may come developments of a revolutionary nature. For first hand evidence of the ineffectualness of research we need only to observe the many instructional procedures in use which have been reliably discredited—certainly educational research has cast doubt on many current practices. Over a considerable period of years it is true that the influences of research are reflected to some considerable extent in teacher training practices, supervisory techniques, and in the production of textbooks, but they rarely have been emphasized to the point necessary to insure functional relationship between principles and techniques and to overcome the tendency of teachers to teach as they have been taught.

Who is to blame for the disregard of research: the college professor, the administrator, the supervisor, the teacher, the patrons? At a recent educational meeting several reports on research studies were given. Two of them dealt with what pupils, teachers, and parents thought about report cards; another, with the construction of a physics curriculum based upon the opinions of community leaders and the science references found in newspapers; and one rather vaguely had something to do with better elementary arithmetic instruction through better mathematical training for teachers. All of the reports were interesting and, as collections of opinion, entirely admirable, but only two of a total of eight reports had any scientific foundation, and neither of these permitted an objective description of the reliability of the results obtained. It is possible that the illustration is unfair; the reports seem reasonably representative, however, of the majority of those which find their way into print.

Obviously not all is well in the field of research. The preservice and inservice training of teachers might be improved by developing the scientific attitude. Better reporting too should help popularize the results of research, and should bring about more tolerance of controlled experimentation on the part of the public. Possibly more than these, however, the character of educational research itself is most at fault, and until that is changed, regardless of how sincerely the field worker subscribes to research, few practical benefits will come. The vigor of any branch of the sciences is reflected in the attitudes of those closest to it. In the field of educational research, if the writer's experience is typical, the majority of workers are lost in minutae; the barrenness of this sort of research has provoked widespread skepticism of its aspirations. Rather than the healthy skepticism characteristic of research workers in other fields, there seems to be here mainly cynicism and doubt. Before such attitudes can be changed, researchers must move up closer to the scene of action and research must become more productive. The preponderance of unscientific and trivial research at present establishes an unsavory reputation for even the good and operates against the acceptance and use of all research results.

There has of course been a great deal of excellent research. The newer trends toward measuring the worth of curricular and instructional practices in units of pupil growth are promising. The various evaluative criteria, as

they become more refined, may be instrumental in raising certain public school standards to more desirable levels. Insofar as studies of the nature of intelligence, human behavior, and the nature of the learning process may be translated into effective practices, they benefit the public school. But more research concerned with the fundamental knowledge and principles essential to educational are needed.

The normative survey type of research with its polling and interpreting techniques, while always of interest to the student of education and society, has done little to increase foundational knowledge. When it collects information relating to the opinions and practices in areas of common and immediate concern it serves an important and desirable function. When it discloses deficiencies in certain areas it may lead the way to possible improvement. Occasionally it may give rise to new ideas, relationships, and hypotheses to be tested. For the most part, however, it has been trivial, uncoordinated and poorly designed.

Much of the present impotency of educational research rests squarely upon the so-called statistical and experimental investigations of causal relationships. Between 1920 and 1929 approximately 60 per cent of all research published was of these types. Despite the many excellent investigations of this sort, in the majority there seems to have been a very superficial use of sampling formulae, and hasty and inconclusive results. The pedantry concerning levels of significance of differences between two methods of little general pertinence or practicality has been particularly distressing. Too many of the studies of methods, techniques, and practices have been poorly conceived, and too many have stopped far short of convincing demonstration.

The foregoing very brief criticisms of educational research suggests a number of changes in the character of educational research necessary before it can become a truly vital force in the public school. Chief among these, it would seem, is a shift from extensive to intensive research. The idea of intensive research means simply that when a problem of importance is identified it will become and remain the center of group activity until it is solved in the convincing terms of large numbers, repeated samples, and realistic conditions, or until it becomes evident that at present it permits no solution. This might offset somewhat the fragmentary character of current

research and its inconclusiveness. Originality, even mediocre, devious originality, has been a more influential criterion of the desirability of research than possible usefulness of results. So far as the public school is concerned the duplication of a significant piece of research has tenfold the importance of an original one which merely suggests new hypotheses and problems for further research. The writer recently heard an enthusiastic lecturer state that the question of learning the basic skills had been settled for all time, by the New York City experiment with the activity curriculum. As a matter of fact, the experiment, important as it is, merely indicated that a certain number of elementary pupils, in a certain number of schools, working under certain conditions, acquired the basic skills as satisfactorily and certain other desirable increments of growth more satisfactorily under the activity program. The distinction is not pedantic. Before the public school, in general, will be able to make the commitments necessary to the introduction of the activity curriculum, the evidence in its favor must be piled up until it offsets the endless variety of teachers, pupils, and environments that characterize public school instruction. Actually, the experiment merely introduced, however dramatically and provokingly, the problem of how the basic skills shall be learned.

None of the real problems faced by the public school are easy; all of them demand painstaking, scientific research, cooperative activity, and the use of the best developed tools of statistical analysis.

There is already some evidence of attempts to coordinate and focus the results of research. Such compendiums as The Encyclopedia of Educational Research have assembled and classified a great many of worth while studies. But the wide variation in the designs of the reported studies dealing with the same problems, their lack of common purpose and emphasis, their failure to employ comparable methods of analyses, and necessary brevity make it difficult to distinguish between objective and subjective evidence, and make compilation of results misleading.

In order effectively to intensify and coordinate research, accredited, centralized agencies should be established to direct the research activity relating to a particular problem from beginning to end. These may be governmental or voluntary in character. The functions of these agencies would be those

of identifying and delimiting pertinent, vital problems, assigning the problems to many cooperating schools and laboratories, and analyzing and interpreting the results. Under such cooperative effort research should become of common concern to the educational world, even to the general public, and its results would be of more immediate significance.

M. W. TATE,
Superintendent of Schools, Gooding, Idaho.

Research Abstracts and Bibliographies

Address all communications relative to research abstracts and bibliographies to A. S. Barr, University of Wisconsin, Madison, Wisconsin.

CHISHOLM, LESLIE L., (Chairman) ERICKSON, C. L.; and STONE, CLIFF W. *Condensations of Masters' Theses in Education.* Research Studies of the State College of Washington, No. 4. Pullman, Washington: State College of Washington, 1941. Pp. 261–348.

This issue contains abstracts of fourteen Masters' theses in education accepted at the State College of Washington during the past few years.

DALE, EDGAR and VERNON, NORMA. *Consumer Education: An Annotated Bibliography.* Modern Media of Education, Series 1, No. 3. Columbus, Ohio: Bureau of Educational Research, Ohio State University and Columbia, Missouri: Institute for Consumer Education, Stephens College, 1941. Pp. iii + 35.

Summaries of sixty-eight selected articles on consumer education appearing in educational journals in recent years.

DEFFENBAUGH, W. S. and KEESECKER, WARD W. *State Boards of Education and Chief State School Officers: Their Status and Legal Powers.* Studies of State Departments of Education, U. S. Office of Education, Bulletin, No. 6; Monograph, No. 1. Washington, D. C.: Government Printing Office, 1941. Pp. vii + 103.

A monograph indicating (1) trends in respect to state boards of education and their officers—qualifications, methods of selection, term of office, present status, and (2) principal powers and duties vested by law in the boards and officers in the respective states.

DIVISION OF CHILD ACCOUNTING AND RESEARCH. *The Evaluation of Pupil Progress in Pennsylvania.* Research Service in Education: Keeping in Touch With the Public Schools, Bulletin 75, No. 19. Harrisburg, Pennsylvania: Department of Public Instruction, 1941. Pp. v + 48.

The report of the fourth in a series of investigations in the field of ageness and progress of children in Pennsylvania public schools.

ESPÉNDEZ-NAVARRO, JUAN and SMITH HENRY LESTETR. *Education in Guatemala.* Bulletin of the School of Education, Indiana University, No. 2. Bloomington, Indiana, Bureau of Cooperative Research and Field Service, Indiana University, 1942. Pp. 97.

An account of the general background of the country of Guatemala; the educational system; nursery, elementary and secondary education; teacher training, special and higher education.

GILBERT, LUTHER C. and GILBERT, DORIS WILCOX. *Training for Speed and Accuracy of Visual Perception in Learning to Spell.* University of California Publications in Education, No. 5. Berkeley and Los Angeles, California: University of California Press, 1942. Pp. 351–426.

A report of a study of eye movements in spelling conducted with pupils from the fourth through the sixth grades, in which one group was taught by a method placing a premium on speed and accuracy, the other group by the method used in the regular school system.

HELLER, FRIEDA M. and WHITE, RUTH. *Books to Enrich Teaching.* Bulletin of the Ohio Conference on Reading, No. 1. Columbus, Ohio: Ohio State University Press, 1941. Pp. v + 23.

Selected lists of books including title, author, publisher, price, and grade appropriateness, under such headings as bird life, the Buckeye State, "contact" (aircraft), growing up with music, etc.

LEDERER, MAX. *Secondary Education in Austria, 1918–38.* Bulletin U. S. Office of Education, No. 9. Washington: D. C.: Government Printing Office, 1942. Pp. vi + 41.

The author, formerly a secondary school teacher in Austria, describes the progress made in attempting to educate young Austrians in the principles of democracy in the period between two World Wars.

MACKINTOSH, HELEN K. *Supervision of Elementary Education As a Function of State Departments of Education.* Studies of State Departments of Education, U. S. Office of Education Bulletin, No. 6; Monograph, No. 8. Washington, D. C.: Government Printing Office, 1941. Pp. vi + 86.

One of a series of monographs dealing with the states' functions in elementary education. This monograph describes the organization and function of supervisory programs in the various states.

MALAN, CLEMENT T. *The Present Status of High School Guidance As it Affects the Seniors of 1942 in Indiana.* Guidance Research Bulletin, No. 1. Indianapolis, Indiana: Department of Public Instruction, 1942. Pp. 33.

The report of a study concerning the present status of guidance in township, town, and city high schools of Indiana, and the effects on the high school seniors of 1942.

MORRISON, J. CAYCE. *The Activity Program: A Curriculum Experiment.* Report of a Survey of the Curriculum Experiment with the Activity Program in the Elementary Schools of the City of New York. Albany, New York: State Education Department, 1941. Pp. 182.

The survey on the activity program includes a discussion of the distinguishing characteristics and concepts of the program, the extent to which the program was developed, the effect on the development of children's knowledge, attitudes, and behavior, and the influence on the teachers.

MURCHISON, CARL, Editor. *Genetic Psychology Monographs*, XXV. Monograph No. 1. Provincetown, Massachusetts: The Journal Press, 1942. Pp. 215.

Contains studies on factors determining family size in a selected professional group; a genetic study of geometrical-optical illusions; and interpretation of behavior-rating in terms of favorable and unfavorable deviations: a study of scores from the Read-Conrad Behavior Inventory.

NATIONAL EDUCATION ASSOCIATION. *Teacher Personnel Procedures: Selection and Appointment.* Research Bulletin, No. 2. Washington, D. C.: Research Division, National Education Association of the United States, 1942. Pp. 79.

The first half of a summary of practices during 1940–41 regarding teacher personnel, presenting data on such topics as: responsibility for selection and appointment of teachers, standards for eligibility, recruitment and evaluation of candidates, and appointment and orientation.

OCCUPATIONAL INFORMATION AND GUIDANCE SERVICE. *Medicine.* Guidance Leaflet, No. 6, U. S. Office of Education. Washington, D. C.: Government Printing Office, 1941. Pp. 24.

This leaflet on medicine is one of a series of guidance leaflets on various careers. It contains statistical information on census, need and supply, gross income; information on training; a list of medical schools; and information on related occupations.

ROBINSON, FRANCIS P. and HALL, WILLIAM E. *Concerning Reading Readiness Tests.* Bulletin of the Ohio Conference on Reading, No. 3. Columbus, Ohio: Ohio State University Press, 1942. Pp. iii + 16.

A booklet to assist teachers and administrators in selecting the most effective reading readiness test for a particular situation. Various tests available are analyzed for reliability, predictive success, relation of scores to intelligence ratings.

SEAY, MAURICE F. and MCGLOTHLIN, WILLIAM J. *Elementary Education in Two Communities of the Tennessee Valley.* Bulletin of the Bureau of the Bureau of School Service, College of Education, University of Kentucky, No. 3. Lexington, Kentucky: University of Kentucky, 1942. Pp. 182.

Detailed accounts of educational theory put into practice in two elementary schools: Wilson Dam School near Sheffield, Alabama, and Gilbertsville School in Marshall County, Kentucky.

SLATER, RUSSELL. *Books for Youth Who Dislike Reading.* Bulletin of the Ohio Conference on Reading, No. 2. Columbus, Ohio: Ohio State University Press, 1941. Pp. iv + 16.

An annotated list of books found by the author to be enjoyed by retarded readers in upper elementary, junior high, and early senior high school.

STRUCK, F. THEODORE, Chairman, Committee of the National Association of Industrial Teacher Trainers. *A Study of Industrial Teacher Education at the Graduate Level.* A. V. A. Bulletin, No. 2. Washington, D. C.: Committee on Research, American Vocational Association, Inc., 1941. Pp. vi + 42.

The report of a study on current practices in industrial teacher education institutions giving graduate instruction in industrial education. Entrance, residence, and theses requirements, and kinds of degrees granted are some of the topics discussed.

AMERICAN EDUCATION RESEARCH ASSOCIATION. "Pupil Personnel, Guidance, and Counseling," *Review of Educational Research,* XII. Washington, D. C.: National Education Association of the United States, 1942. Pp. 136.

Review of research on guidance: the student in elementary, secondary, and higher education; the conditions that make effective guidance possible; counseling and work with groups; the specialized aspect of information about educational and vocational opportunities; the preparation of teachers and specialists.

AMERICAN EDUCATION RESEARCH ASSOCIATION. "School Plant and Equipment," *Review of Educational Research,* XII. Washington, D. C.: National Education Association of the United States, 1942. Pp. 137–254.

Reviews the literature from April, 1938, to July, 9141, on the school plant and society, planning and constructing school buildings and grounds, maintenance and operation of school buildings, the relations of states to local school units, and court decisions in the school plant field.

BONAR, HUGH S. *Studies and Summaries.* Bulletin, Manitowoc Public Schools. Manitowoc, Wisconsin: Board of Education, 1942. Pp. 88.

The superintendent of Manitowoc Public Schools presents the study of specific problems: the meaning of democracy, high school students' anxieties, statements of philosophy, reorganization for curriculum study, high school students' budgets, the camera as a supervisory aid, etc.

CALIFORNIA GENERAL EDUCATION COMMITTEE. *Improvement of Instruction in the Required Course in Citizenship in California High Schools.* Bulletin of the California State Department of Education. Sacramento, California: State Department of Education, 1941. Pp. vii + 54.

A joint committee of the Association of California Secondary School Principals and the California State Department of Education presents the results of a study of the nature of citizenship, the organization, content and methods, aims and objectives of civics and history courses.

CUMBEE, C. F. HARLESS, BYRON B., and MEAD, A. R. *Our Schools in War Time: Can We Maintain Adequate Personnel?* Bulletin No. 24 of the Bureau of Educational Research. Gainesville, Florida: Bureau of Educational Research, University of Florida, 1942. Pp. 12.

A mimeographed pamphlet presenting a brief picture of the effects of war on the situation in Florida schools since

January, 1941: the loss of men teachers and administrators thus far, forecasts for 1942, and suggestions for solving the present problem.

EATON, MERRILL THOMAS. *A Study of Indiana University Withdrawals.* Bulletin of the School of Education, Indiana University. Bloomington, Indiana: Bureau of Cooperative Research and Field Service, Indiana University, 1942. Pp. 20.

This study reports the reasons why 20% of the students enrolled at Indiana University in 1939–40 withdrew during or at the end of the school year.

ENGELHARDT, N. L. *The School Building Needs of the Sewanhaka High School District, Floral Park, New York.* Bulletin of the Board of Education. Floral Park, New York: Board of Education, 1941. Pp. viii + 56.

A survey of the Sewanhaka High School District, Nassau County, New York, as an aid to determining the method by which to solve the overcrowding in the present high school building and of providing for the future. Maps, tables, graphs and charts accompany the discussion.

FROELICH, GUSTAV J. *The Prediction of Academic Success at the University of Wisconsin, 1909–1941.* Bulletin of the University of Wisconsin, Madison, Wisconsin: Bureau of Guidance and Records, University of Wisconsin, 1941. Pp. 44.

A summary and coordination of some 150 pages of published research, 300 pages of University bulletins and 650 pages of unpublished materials on the prediction of academic success at the University of Wisconsin during the past thirty-two years.

GRAY, RUTH A. *Bibliography of Research Studies in Education, 1939–1940.* U. S. Office of Education Bulletin, No. 5. Washington, D. C.: Government Printing Office, 1941. Pp. xiv + 404.

A list of 4012 theses and studies in education reported by 133 institutions for the period of September, 1939 through August, 1940. Topics include current educational conditions, federal aid, CCC, democracy and education, training for use of leisure time, etc.

HINCKLEY, WILLIAM W. *Handbook of College Entrance Requirements.* U. S. Office of Education Bulletin, No. 13. Washington, D. C.: Government Printing Office, 1941. Pp. 79.

A commpilation of entrance requirements for 674 universities and colleges in the United States as they existed in the fall of 1940. Trends can be received by comparison of the 1940 data with that of previous studies of 1912, 1922, and 1931.

MCCONNELL, T. R., SCATES, DOUGLAS E., and FREEMAN, FRANK N. *The Conceptual Structure of Educational Research.* Supplementary Educational Monographs, No. 55. Chicago, Illinois: University of Chicago Press, 1942. Pp. vii + 47.

A monograph presenting three papers written for a symposium on "The Conceptual Structure of Educational Research" held at the University of Chicago, September, 1941. These papers discuss the nature of educational research, the con-

ceptual background of research, and controlling concepts in educational research.

NATIONAL EDUCATION ASSOCIATION. *Teacher Personnel Procedures: Employment Conditions in Service.* Research Bulletin, No. 3. Washington, D. C.: Research Division, National Education Association of the United States, 1942. Pp. 83–116.

The second half of a report of teacher personnel procedures in city schools in 1940–41, dealing with the major problems related to the condition of employment after a teacher has been selected and appointed: salaries, sick leave, termination of service, development of personnel in service, and administration of the personnel program.

PAUL, J. B., Director. *Report of the Sophomore Testing Program, Spring 1941.* Research Report No. 43. Cedar Falls, Iowa: Bureau of Research, Iowa State Teachers College, 1942. Pp. 25.

A mimeographed report of the comparison of the attainment of the Iowa State Teachers College Sophomores with the attainment of the sophomores from all colleges participating in three tests: Cooperative Contemporary Affairs, Form R, Cooperative English, Form R, Cooperative General Culture, Form R. These tests were constructed by the Cooperative Test Service of the American Council of Education.

PETERS, CHARLES C., Editor. *Abstracts of Studies in Education at the Pennsylvania State College, Part X (1942).* Pennsylvania State College Studies in Education, No. 24. State College, Pennsylvania: School of Education, Pennsylvania State College, 1942. Pp. 64.

Twenty-two abstracts of studies in education at Pennsylvania State College since 1940, together with lists of theses in education from 1912 to 1939; in physical education to 1939, in agricultural education from 1933 to 1939.

POTTHOFF, EDWARL F. *Examinations in Contract Law Courses.* Studies in Higher Education, No. 2; University of Illinois Bulletin, No. 35. Urbana, Illinois: University of Illinois, 1942. Pp. 100.

A manual to aid the law instructor in the construction and use of examinations in courses in contract law, covering such topics as the objectives in a contracts course, objective and essay examinations, and principles for constructing examinations.

PROCEEDINGS OF THE AMERICAN PHILOSOPHICAL SOCIETY. *Symposium on Recent Advances in Psychology.* Philadelphia, Pennsylvania: The American Philosophical Society, 1941. Pp. 461–563.

Papers read before the American Philosophical Society Annual General Meeting, April 25, 1941, including such subjects as Coelescence of Neurology and Psychology, The Genesis of Behavior Form in Fetus and Infant, On the Nature of Associations, Mental Abilities, Psychoanalysis and Scientific Method, Psychology and Defense, and Motivation, Learning, and Adjustment.

PROCEEDINGS OF THE SEVENTH ANNUAL GUIDANCE CONFERENCE. *Studies in Higher Education, XLIII.* Bulletin of the Division of Educational Reference. Lafayette, Indiana: Division of Educational Reference, Purdue University, 1942. Pp. 108.

General and specific guidance programs form the subjects of the papers read at

the Seventh Annual Guidance Conference held at Purdue University November 14 and 15, 1941.

REID, SEERLEY. *Radio in the Schools of Ohio*. Bulletin No. 43. Columbus, Ohio: Evaluation of School Broadcasts, Ohio State University, 1942. Pp. 57.

A survey of Ohio schools: to what extent they possess radio and sound equipment, use school broadcasts, and use the content and techniques of radio in curricular and extra-curricular activities.

REID, SEERLEY and DAY, DANIEL D. *Research in the Classroomm Use of Radio*. Bulletin No. 55. Columbus, Ohio: Evaluation of School Broadcasts, Ohio State University, 1942. Pp. 32.

A discussion of recent research in the classroom use of radio, followed by 205 bibliographic references.

REITZ, WILHELM, Director Research Personnel Provided by the Michigan Works Projects Administration, Official Project No. 65–1–51–88. *Admission Status of 2188 Applications for Teacher Education*. Research Studies in Selective Admission and Placement, Wayne University College of Education, No. 2. Detroit, Michigan: Board of Education, 1940. Pp. lxiii + 187.

Second in a series of bulletins on admission and placement, presenting the admission status of 2188 applicants for teacher education at Wayne University from September, 1936 to February 1939. Formal applications, academic factors and tests, non-academic factors and examinations, personality factors, interviews, and ratings are presented in detail accompanied by tables and charts.

REPORT OF A CONFERENCE ON CONSUMER EDUCATION IN SECONDARY SCHOOLS. *Some Principles of Consumer Education at the Secondary School Level*. U. S. Office of Education Pamphlet No. 94. Washington, D. C.: Government Printing Office, 1942. Pp. v + 42.

Twenty-five members of a conference on consumer education cooperatively produce a report on the scope of minimal essentials, organization, learning activities and methods, sources of materials and their evaluation, pre- and in-service teacher training for consumer education in secondary schools.

ROBBINS, IRVING. *What Teachers Think of Radio*. Bulletin No. 58. Columbus, Ohio: Evaluation of School Broadcasts, Ohio State University, 1942. Pp. 13.

A survey among Muskingum County, Ohio, teachers to discover the radio listening habits of teachers themselves, their opinion of radio programs students hear at home, and the use teachers make of radio in school.

ROWLAND, HOWARD. *Crime and Punishment*. Bulletin No. 54. Columbus, Ohio: Evaluation of School Broadcasts, Ohio State University, 1942. Pp. 16.

Fifty broadcasts of crime dramas heard in Columbus, Ohio, during one week were recorded and analyzed for crime patterns and plots and character stereotypes. The presentation concluded with implications for radio education.

SMITH, LLOYD C. *A Historical Outline of the Territorial Common Schools in the State of Kansas.* Studies in Education No. 24, Bulletin of Information, No. 2, Kansas State Teachers College of Emporia. Topeka, Kansas: Kansas State Printing Plant, 1942. Pp. 60.

A historical study designed to trace the development of the common schools in Kansas during the territorial period. Facts about schools and personnel as well as first school laws, the early constitution, and early school policies are presented.

WIEBE, G. D. *A Primer on Questionnaires with Special Reference to School Broadcasts.* Bulletin No. 59. Columbus, Ohio: Evaluation of School Broadcasts, Ohio State University, 1942. Pp. 40.

The author examines the strengths and weaknesses of questionnaires, discusses the problems to be solved, what students should answer the questionnaires, how the questions should be asked, and the findings reported. The techniques is illustrated with special reference to school broadcasts.

WIEBE, G. D. and CHURCH, C. F. *Educational Music Broadcasts of 1941.* Bulletin No. 45. Columbus, Ohio: Evaluation of School Broadcasts, Ohio State University, 1942. Pp. 37.

A bulletin to answer a frequent question from music teachers, "What is the best that is being done in the line of educational music broadcasts?" Criteria by which educational music broadcasts can be judged are based on a study of thirty selected educational music broadcasts and five years of research.

WIEBE, G. D. *The Program Analyzer.* Bulletin No. 47. Columbus, Ohio: Evaluation of School Broadcasts, Ohio State University, 1942. Pp. 11.

The "program analyzer," a type of laboratory equipment, was used by a group of subjects to indicate likes and dislikes of portions of several radio programs: "This Is War," "Brahms Music," "Wellsprings of Music," and "Atomistic Listening."

WOELFEL, NORMAN. *What Objectives for School Broadcasts?* Bulletin No. 53. Columbus, Ohio: Evaluation of School Broadcasts, Ohio State University, 1942. Pp. 8.

A selected group of teachers examine school broadcasts for their educational value. The summary of objectives achieved and not achieved by the classroom use of radio broadcasts in the social studies field are given.

MICROFILM TEXT

Abstracts of the following doctoral dissertations for which microfilm are available for the complete text were received from the Colorado State College of Education.

ADDY, MARHT L. *The Development of a Meaning Vocabulary in the Intermediate Grades.* Ann Arbor, Michigan: University Microfilms, No. 411, 1942.

ARNDT, ELMER RUDOLPH. *The Economic Problems of American Life Since 1930 as Seen by Frontier Thinkers.* Ann Arbor, Michigan: University Microfilms, No. 412, 1942.

DUMAS, ENOCH. *The Effect of Controlling Vocabulary Upon the Understanding of Sentences in Reading.* Ann Arbor, Michigan: University Microfilms, No. 398, 1942.

FOSTER, A. N. *Present Practices in Homogeneous Grouping in One Hundred Ninety-Eight Elementary Schools in Texas.* Ann Arbor, Michigan: University Microfilms, No. 399, 1942.

HEADLEY, JOHN WILLIAM. *County Trust Fund Investments of the Permanent School Fund of South Dakota.* Ann Arbor, Michigan: University Microfilms, No. 415, 1942.

HEADLEY, JOHN. *Problems of Public School Support in South Dakota.* Ann Arbor, Michigan: University Microfilms, No. 403, 1942.

HILL, EUGENE L. *A Survey of Physical Education Attitudes in Sixty-Three Secondary Schools of Illinois.* Ann Arbor, Michigan: University Microfilms, No. 402, 1942.

IKENBERRY, OLIVER S. *Economic Factors Affecting Education in an Agricultural Community.* Ann Arbor, Michigan: University Microfilms, No. 406, 1942.

IKENBERRY, OLIVER S. *Leisure Activities of a Community.* Ann Arbor, Michigan: University Microfilms, No. 405, 1942.

IKENBERRY, OLIVER S. *The Health, Government, Education, and Religion of a Community.* Ann Arbor, Michigan: University Microfilms, No. 395, 1942.

KRAMER, J. HOWARD. *The Speaking Situations Which Secondary School Pupils Meet With the Greatest Frequency.* Ann Arbor, Michigan: University Microfilms, No. 396, 1942.

MASON, CHARLES C. *A Report of an Analysis of Certain Basal Readers and Teachers' Manuals in Grades Four, Five, and Six.* Ann Arbor, Michigan: University Microfilms, No. 393, 1942.

MASON, CHARLES C. *A Report of an Analysis of the Reading Situation in the Second and Third Grades in the Tulsa, Oklahoma Public Schools.* Ann Arbor, Michigan: University Microfilms, No. 393, 1942.

MCCOLLOM, I. N. *Studies in the Evaluation of Educational Attitudes.* Ann Arbor, Michigan: University Microfilms, No. 390, 1942.

MELLON, EUGENE HARVEY. *A Proposed School Budget Law for Illinois.* Ann Arbor, Michigan: University Microfilms, No. 408, 1942.

MORGAN, A. L. *The Present Status of Teacher Rating in the United States.* Ann Arbor, Michigan: University Microfilms, No. 401, 1942.

SMITH, IDA TOWNSEND. *An Experiment in the Education of Retarded Children in the Eighth Grade.* Ann Arbor, Michigan: University Microfilms, No. 410, 1942.

SMITH, IDA TOWNSEND. *The Retardation of Pupils Entering Junior High School.* Ann Arbor, Michigan: University Microfilms, No. 409, 1942.

SMITH, IDA TOWNSEND. *What Can Be Done in the Elementary School to Prevent Retardation?* Ann Arbor, Michigan: University Microfilms, No. 400, 1942.

SPRINGMAN, JOHN H. *A Study of Sixth Grade Pupils' Understanding of Social Studies Textbooks.* Ann Arbor, Michigan: University Microfilms, No. 391, 1942.

VON TREBRA, J. T. *Economic and Leisure Activities and Their Educational Relationships in the Community.* Ann Arbor, Michigan: University Microfilms, No. 413, 1942.

TESTS

BAKER, HARRY J. *Detroit Adjustment Inventory.* Bloomington, Illinois: Public School Publishing Company.

A new test of personality and social conduct for junior and senior high schools to be used as a means of diagnosis or as a teaching aid. Time 30–40 minutes. Sample set 35¢.

GLOSS, G. M. *Physical Ability Test (Males).* New York City: New York University Bookstore, 18 Washington Place.

A battery of tests designed to measure speed, skill in handling objects, control of one's body, strength, and "power explosiveness."

MCCALL, WILLIAM A. and HERRING, JOHN P. *Comprehensive Curriculum Test for Junior and Senior High Schools.* New York: Bureau of Publications, Teachers College, Columbia University, 1941.

The test attempts to measure school practices which affect students' lives. Time 30 minutes.

MCCALL, WILLIAM A. and HERRING, JOHN P. *My Personality Growth Book.* New York: Bureau of Publications, Teachers College, Columbia University, 1941.

A comprehensive personality test dealing with traits thought to be desirable as well as modifiable. The purpose of the test is to measure, diagnose, and improve personality in young persons and adults.

Research News and Communications

Address all research news and communications to Carter V. Good, Teachers College, University of Cincinnati, Cincinnati, Ohio.

Stanford Social Education Investigation.—The Stanford Social Education Investigation is now in the third year of active work with twenty cooperating secondary schools in the western part of the United States. The general plan of the project was described in some detail in the April, 1941, number of the *Journal.* The procedures outlined in that report have been continued. At the 1941 summer workshop participating teachers reported on their work during the preceding year, subjected their materials and procedures to critical analysis, and developed plans and materials for the next year. The staff of the investigation assisted in this study of practices in the cooperating schools and in planning for the future. During the year frequent visits are made to the schools to aid in translating these plans into practice.

As was emphasized in the progress report made a year ago, the major function of this investigation is to stimulate teachers to creative effort and to provide assistance in the development and implementation of desirable programs of social education. Hence, the major emphasis in the work of the staff is that of collaboration with the participating teachers in this developmental program. Edward Krug is continuing the study of the growth and development of the teachers participating in the project. Robert Bush is extending the study of pupil–teacher relationships initiated last year at the Menlo School and Junior College. Miss Lavone Hanna is completing the investigation of the problems approach. The cooperating teachers and administrators are now actively beginning to work on evaluation programs. These programs will be unique to each center. The emphasis will be that of gathering evidence to determine the growth of students in educational objectives which each center has formulated.

A series of thirteen mimeographed bulletins on various aspects of social education has been prepared by the investigation staff. These are available at the Stanford Bookstore, Stanford University, California, at prices from ten to fifty cents each. A price list is available on request.

This investigation is supported by a grant from the General Education Board. It will continue through 1942–43. Considerable emphasis will be given in the 1942 summer workshop and throughout the school year 1942–43 to the preparation of the report of the investigation. The project is being directed by Grayson N. Kefauver and I. James Quillen of the Stanford School of Education, the former of whom prepared this progress report.

Teacher Education.—During 1941 the field program of the Commission on Teacher Education passed its mid-point. The universities, colleges, and school

systems in the cooperative study continued their intensive efforts at self-improvement. The commission, as before, provided consultant services, facilitated intervisitation, aided in conferences, and assisted staff members with respect to their participation in summer workshops. Workshops in which the commission was particularly involved were held at Claremont Colleges, Northwestern University, George Peabody College for Teachers, and Stanford University, as well as Denver, Des Moines, Greenville (S. C.), Houston, Los Angeles, Philadelphia, and Spokane. Cooperating with the workshops primarily intended for teachers in a particular school system were the University of Denver, Drake University, Furman University, University of Houston, Claremont Colleges, University of California at Los Angeles, University of Southern California, Temple University, University of Pennsylvania, Washington State College, and Eastern Washington College of Education. The commission's workshop advisory service had relations with more than a hundred additional institutions.

Workshops were also conducted by the commission-sponsored state-wide studies of teacher education in Michigan and New York, being housed by the University of Michigan and Syracuse University respectively. The New York workshop was attended chiefly by faculty members from liberal arts colleges. Both state-wide studies, as well as that in Georgia, held one or more representative and well-attended conferences during the year, and in other ways provided a stimulus to institutional growth and cooperation. Special state-wide studies were aided in Colorado, Florida, Idaho, Kentucky, Ohio, and West Virginia.

The commission also rendered assistance to the cooperative negro college study, both through its workshop and also by sending consultants to more than a dozen campuses. The establishment of a special cooperative study of problems in the preparation of teachers for new-type secondary school curriculums at Columbia University was facilitated, staff members from high schools and liberal arts colleges being enabled to devote their full time to this enterprise.

The commission's collaboration center in child development concluded its second and last year of extensive operation with more than twenty representatives of different universities, colleges, and school systems in attendance. It shared with the University of Chicago sponsorship of a workshop in human development, held during the summer. This year is being devoted by the child development staff to consultant work and to preparing reports. A quantity of tentative materials has already been published. The consultant staff in problems of personnel and evaluation has also been active in the field and in the dissemination of materials.

The commission's main business for 1942 will be to obtain records and reports from the groups associated with it, and to carry forward its plans for publication. Some eight to ten volumes are forecast. Field activities will continue, but on a declining scale. Special inquiries with respect to pre-service education for community understanding and concerning the place of art in in-service education will be made. The commission will cooperate with the American Association of Teachers Colleges in connection with a two-week "School for Executives" that will be held in the summer.

The war will necessarily affect in a measure the plans and activities of the commission. It is already studying implications and prospects with respect to teacher education. But the main emphases of the program—on the improvement of teacher education through democratic cooperation, with constant regard for changing needs and circumstances—will stand.

This progress report was outlined by Karl W. Bigelow, director of the Commission on Teacher Education.

Eight-Year Study.—The Commission on the Relation of School and College of the Progressive Education Association has brought its eight-year study to a close, with its volume of conclusions and recommendations, *The Story of the Eight-Year Study*, off the press in February, 1942, and four other volumes to appear during 1942. One of these supporting publications, *Exploring the Curriculum*, deals with changes in the curriculum and in instructional procedures of the thirty participating schools, as seen from the viewpoint of the curriculum consultants. In another volume, *Thirty Schools Tell Their Story*, each school writes of its participation in the eight-year study—of its attempts to use its freedom constructively, problems encountered, and failures and successes experienced. The report should go far toward bringing about a closer relationship between the work of the high school and each pupil's purposes and interests, since the findings of the study indicate that a student's success in college is not dependent upon following a prescribed pattern of subjects or units in the secondary school.

Two of the projected 1942 volumes reporting the findings of the Eight-Year Study are concerned with appraisal. One report, *Appraising and Recording Student Progress*, describes the evaluative procedures and records devised by the participating secondary schools. Another volume, *Did They Succeed in College?* follows up the graduates of the thirty high schools to determine how they fared in their college studies and in other phases of college life. Difficulties encountered by the evaluation staff of the Eight-Year Study were in obtaining reasonably satisfactory criteria against which the validity of the appraisal instruments might be checked and in the development of appropriate statistical methods to determine the reliability of tools that involve pattern scores rather than single scores. The chief contribution of this evaluation project is in providing a means for development for a modern curriculum through careful study of data relating to its effectiveness, in contrast to curriculum development solely in terms of hypotheses and appraisal on the basis of personal opinion.

The director of the study is W. M. Aikin.

American Youth Commission.—In 1941 the American Youth Commission of the American Council on Education faced the task of drafting its general report, during a year when war was first imminent and then a reality. A program "based on the experience of the past, adjusted to the realities of the present, and adequate to the foreseeable needs of the future" was prepared under the title *Youth and the Future*. This report (published January 19, 1942) presents concrete proposals and recommendations that have been formulated after six years of investigation, studies, and interpretation of all

problems affecting the care and education of American youth.

Eight reports made by the staff were published during 1941. *Time on Their Hands* is a study of leisure, recreation, and young people, prepared by C. Gilbert Wrenn, University of Minnesota, and D. L. Harley, commission staff member. The report, based on a large amount of unpublished data secured by various staff members throughout the past six years, does more than outline recreation programs for youth; it examines the place of leisure in a world that has changed rapidly under the economic and social changes of the past century.

A contemporary, significant social movement — education for family living — is traced in *Youth, Family, and Education*, prepared by Joseph K. Folsom of Vassar College. Dr. Folsom devotes relatively more space to reporting programs now under way in American schools which are organized around the perplexing personal and emotional problems that confront youth and adults in the practical realities of courtship, marriage, child care, and family relationship.

The third of the staff reports of general content is a revision and enlargement of a comprehensive reference work first published in 1937. This reference book, *Youth Serving Organizations*, compiled by M. M. Chambers, commission staff member, has descriptive material on more than 320 national nongovernmental agencies.

Studies were also published by three of the special projects set up by the commission—the Unemployment Study, Negro Youth Study, and C. C. C.–N. Y. A. Implementation Project—and much research was done on a fourth project, known as the Rural Implementation Project. Summary reports on all four of these programs of investigation will be published in 1942.

Paul T. David, associate director of the commission and in charge of employment studies, is preparing a monograph, *Barriers to Youth Employment*. An exploratory study of the place of publicly supported youth work programs was made by Lewis L. Lorwin, formerly of the International Labor Office at Geneva, as a part of the Employment Study. Published as *Youth Work Programs: Problems and Policies*, the report raises provocative questions in the minds of leaders, educational and otherwise, who are searching for the correct policy to apply to publicly operated work programs.

The final panel of a many-sided Negro Youth Study was added in the summer of 1941 with the publication of *Thus Be Their Destiny*, which sets forth profile studies of groups of Negro young people reared in three "liberal" communities. These studies were gathered by several men, both Negro and white. Earlier in the year *Color and Human Nature: Negro Personality Development in a Northern City*, which analyzed the socio-racial factors affecting the adjustment of Negro youth in Chicago's South Side "black belt", was published. W. Lloyd Warner was senior author; Walter A. Adams, chief of the Psychiatric Division of Providence Hospital in Chicago, and Buford H. Junker were associate authors. On the data established through these studies, and through other investigations made concurrently in the rural and urban South and in the middle states, Robert L. Sutherland bases his summary volume, *Color, Class and Personality*, published in January, 1942.

In preparation at the end of 1941 was an evaluation of the Civilian Conservation Corps as an agency to provide employment and training for youth and to give youth an opportunity to make a major contribution to the national welfare. Tentatively entitled *Youth in the C. C. C.*, the report was being prepared by Kenneth Holland, director of the C. C. C.–N. Y. A. Implementation Project, and Frank Ernest Hill. Holland also made two other reports to the commission during 1941. One reviewed the activities of five camps sponsored by the American Friends Service Committee and was named *Work Camps for College Students*. In collaboration with George L. Bickel, of the National Youth Administration, Holland wrote *Work Camps for High School Youth*, a brief review of the junior camp movement. All these reports have been published by the American Council on Education, 744 Jackson Place, Washington, D. C.

The fifteen-member commission, headed by Owen D. Young, issued one statement of policy during 1941. The statement, printed in January, 1941, as *Next Steps in National Policy for Youth*, was written in full anticipation of the war time needs of youth. Before the year's end, that anticipation was fulfilled.

The director of the commission is Floyd W. Reeves.

Carnegie Foundation.—During the fiscal year 1940–41 a co-operative arrangement between Carnegie Corporation of New York and the Carnegie Foundation for the Advancement of Teaching embraced twenty-five research projects, of which six were pursued by the Foundation's Division of Educational Enquiry, and nineteen by other institutions, agencies, or bodies. In the preceding year these projects totaled twenty-two.

The arrangement between the Corporation and the Foundation respecting projects in the field of higher education from 1924 to June 30, 1941, has included 168 grants totaling $1,727,708, for 94 projects related to the higher educational level. Seventeen of these projects involving $564,743 in 41 grants have been pursued in the Foundation offices. Seventy-seven projects involving $1,162,965 in 127 grants have been carried on under the auspices of 44 other educational institutions or bodies, to which the Foundation has transmitted the funds involved. Three of these projects could not be carried out as planned and on this account sums remaining in the amount of $25,000 were returned to Carnegie Corporation of New York. The total of individual projects effective, 1924–41, is therefore 91.

Commonwealth Fund.—The Commonwealth Fund reports that it has appropriated $1,841,332.46 in the year ending September 30, 1941, for purposes associated with "the welfare of mankind," in accordance with the wish of its founder, Mrs. Stephen V. Harkness.

Since the war began the Fund has set aside $685,000 for war relief and related activities. It has made direct gifts thus far to the British War Relief Society, the United China Relief, the Greek War Relief Association, the American Field Service, the American Friends Service Committee, the United Service Organizations, and the American Red Cross. Through Harvard University it has contributed to the Harvard-Red Cross Epidemiological Unit now operating a hospital and field service for communicable disease control in England, and through the British War

Relief Society to the American Hospital in Britain.

In England the Fund is also represented by the Child Guidance Council and by a training course in mental health work at the London School of Economics and Political Science.

While the suspension of the British Fellowships offered each year since 1925 is the most conspicuous change in the routine activities of the Fund, the effect of the war is felt at many other points.

In the past year the Fund gave subsidies or consultant services in 28 states in support of four main objectives: the encouragement of research and of good teaching in medical schools; the enrichment and extension of public health services to rural communities; the provision or improvement of hospital facilities and the standardization of hospital services in rural communities; and the strengthening of community facilities for mental health services.

Conservation of Journals.—The American Library Association created during 1941 a Committee on Aid to Libraries in War Areas, headed by John R. Russell, the librarian of the University of Rochester. The committee is faced with numerous serious problems and hopes that American scholars and scientists will be of considerable aid in the solution of one of these problems.

One of the most difficult tasks in library reconstruction after the first World War was that of completing foreign institutional sets of American scholarly, scientific, and technical periodicals. The attempt to avoid a duplication of that situation is now the concern of the committee.

Many sets of journals will be broken by the financial inability of the institutions to renew subscriptions. As far as possible they will be completed from a stock of periodicals being purchased by the committee. Many more will have been broken through mail difficulties and loss of shipments, while still other sets will have disappeared in the destruction of libraries. The size of the eventual demand is impossible to estimate, but requests received by the committee already give evidence that it will be enormous.

With an imminent paper shortage, attempts are being made to collect old periodicals for pulp. Fearing this possible reduction in the already limited supply of scholarly and scientific journals, the committee hopes to enlist the cooperation of subscribers to the *Journal of Educational Research* in preventing the sacrifice of this type of material to the pulp demand. It is scarcely necessary to mention the appreciation of foreign institutions and scholars for this activity.

Questions concerning the project or concerning the value of particular periodicals to the project should be directed to Wayne M. Hartwell, executive assistant to the Committee on Aid to Libraries in War Areas, Rush Rhees Library, University of Rochester, Rochester, New York.

Committee on Education and Defense.—During 1941 the National Committee on Education and Defense, sponsored by the National Education Association and the American Council on Education, with Willard E. Givens and George F. Zook as co-chairmen, has carried forward the following activities:

1. Sponsoring of three national conferences of governmental and higher educational leaders to discuss the particular

responsibilities of colleges and universities in this emergency.

2. Furnishing to colleges and universities through the Bulletin of the American Council on Education, "Higher Education and National Defense," authentic information on governmental developments, including particularly liaison with Selective Service headquarters.

3. Issuing through the Educational Policies Commission a series of pamphlets for teachers and pupils dealing with defense issues.

4. Issuing special materials through Teachers College, Columbia University, on the pre-service aspects of Selective Service.

5. Cooperating with the Office of the Coordinator of Inter-American Affairs on the development of an educational program both in this country and in Latin America.

6. Cooperating with such governmental units as the War Department, the Navy Department, the Treasury Department, and the Office of Civilian Defense in the development of various programs related to education.

During the current year the National Committee on Education and Defense will continue its cooperative attack upon these and similar problems, as well as assist the recently created Wartime Commission of the United States Office of Education.

Wartime Commission.—The Wartime Commission of the Office of Education was created at the end of 1941 with four major purposes:

1. To improve educational services for the government.

2. To aid in caring for civilian educational needs associated with the war and to determine to what extent federal financial assistance may be necessary.

3. To advise the government and educational institutions with respect to special problems involving the effects of wartime measures on schools, colleges, and libraries.

4. To facilitate formulation of plans for study of post-war readjustments.

The chairman of the commission is J. W. Studebaker, U. S. Commissioner of Education.

Defense Activity, Office of Education.—In addition to the Wartime Commission, other defense efforts of the Office of Education, which is serving especially as a great coordinating agency, include:

1. Administration of the regular programs of vocational education and rehabilitation.

2. In cooperation with the Office of Production Management and staff officers of the Federal Security Agency, supervision of special federal appropriations, $116,000,000 in 1941, for schools and colleges, to accomplish purposes vital to winning the war.

3. In cooperation with state departments of education and local school systems, determination of the needs for federal investment in school facilities in defense areas, totaling $66,000,000 at the end of 1941.

4. Promotion of inter-American friendship and understanding, in cooperation with the Office of the Coordinator of Economic and Cultural Relations with Latin America and with the Division of Cultural Relations of the Department of State.

5. Establishment of an information exchange on education and defense, to serve

as a clearing house for many voluntary organizations and government agencies.

6. Publication of an extensive series of pamphlets dealing with education and defense, and production of motion pictures and radio programs of service in the war effort.

7. Inauguration of a school and college civilian morale service in cooperation with government agencies, state departments of education, higher institutions, and libraries.

8. Formulation of a program of long-time planning for education in the states, especially for the physical plant, in cooperation with other divisions of the Federal Security Agency, the National Resources Planning Board, and the Public Works Administration.

Commission on Defense of Democracy.—The National Education Association has organized a Commission on the Defense of Democracy through Education, with a program of investigation and action designed to safeguard the schools. Its specific purposes are to: create public understanding and support of the school, investigate criticisms and groups hostile to education, investigate alleged subversive teaching, and cooperate with organized groups of teachers and with individual workers in programs of public relations. The full-time secretary of the commission is Donald DuShane.

Roster of Scientific Personnel.—The National Roster of Scientific and Specialized Personnel has been set up as a semidefense agency under the auspices of the National Resources Planning Board and the Civil Service Commission. The advisory committee for the National Roster includes representatives of the American Council on Education, the American Council of Learned Societies, the National Research Council, and the Social Science Research Council.

Teacher Examinations.—The National Committee on Teacher Examinations of the American Council on Education has continued its work, although war conditions affected adversely the number of candidates tested in January, 1942. Both superintendents and teacher-education institutions have expressed an active interest in the examinations and have extended cooperation. The records of the committee should prove especially valuable in the regional exchange of teachers during the impending shortage of qualified teachers.

Cooperative Test Service.—An appraisal service of the American Council on Education, the Cooperative Test Service, promises increased usefulness as a tool in the acceleration program of higher education. Such objective and comparable examinations may be applied to the selection of superior high school pupils for early entrance to college, and to allowing credit to adequately informed college students for college courses in which they may never have been formally enrolled.

Bennington Evaluation Study.—During 1941 the Bennington College evaluation project reached the reporting stage. Early in the fall an oral report of progress was given to the faculty and trustees. This is now serving as a basis for faculty discussions and reorganization of the program.

As indicated last year, this study from its inception has been a cooperative project involving the participation of students, as well as the faculty and trustees. These groups worked with the evaluation staff

in studying the background of students, which covered data on why students came to Bennington and on their readiness for college as seen from records of interests, aptitudes, achievements, and plans for the future. They studied and attempted to state more clearly their basic assumptions and aims. They reviewed in detail their curriculum, which from the beginning was not set up in terms of blanket prescriptions and requirements but developed in relation to each student who entered; this phase, therefore, meant an extensive analysis of the range of studies pursued by all students the college has served. They reviewed and appraised the concrete experiences beyond courses that students have in connection with the community government, the winter period when the college is closed for six weeks, the social studies surveys, the senior projects, and the non-residence year. They considered carefully the summary of data on what students do with their time.

The faculty likewise examined and drew implications from evidence collected to answer questions they raised at the beginning of the study such as: Do students follow their interests? What person-to-person relationships are developed to stimulate learning? What attitudes do students develop? They also faced squarely a summary of judgments made of various features of the college by people in the world outside, by students, by graduates (ninety percent of whom had responded to a detailed questionnaire), by former students who had not been graduated, and by the faculty.

Progress has already been made on the reorganization of the program in the light of this intensive appraisal. Late in 1942 a report will be published incorporating the results of the special study and a review of the steps taken to adapt, even more effectively than in the past, the educational program to the needs of students in a changing social order.

The director of the study is Alvin C. Eurich, who prepared this statement.

General Education.—The basic character of the Cooperative Study in General Education of the American Council of Education remains unchanged, with a definite conviction on the part of the participating colleges that especially in the war emergency a high quality of general education is essential. Cooperative faculty and student participation has been utilized in formulation of purposes, selection and organization of materials, development of instructional procedures, and evaluation of results. During the past year the major projects in general education have been concerned especially with problems of student personnel and counseling, social sciences, humanities, science, and administration.

Both the Cooperative Study in General Education and the Commission on Teacher Education have continued their evaluation activities by way of helping an institution to appraise its progress by the standard of its own objectives. Both projects are concerned with implementation of significant insights and research findings among the participating institutions.

Implementation in Secondary Education.—In November, 1941, the Implementation Commission of the National Association of Secondary-School Principals published a report, *The School Follows Through*, of the second year's work of the Occupational Adjustment Study. Proposals and plans have been outlined by which secondary-school principals may

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Sworn to and subscribed before me this 30th day of September, 1942.

[Seal] OLAVA H. GULLORD.

(My commission expires Oct. 24, 1943.)

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RELATIONSHIP OF ELEMENTARY-SCHOOL ACHIEVEMENT TESTS TO ACHIEVEMENT TESTS TAKEN IN THE SECONDARY SCHOOL

ARTHUR E. TRAXLER and MARGARET S. SELOVER

Editor's note: There have been many attempts to find tests of prognostic value. The authors find that elementary achievement tests have prognostic value in predicting secondary school achievement particularly in the language subjects.

THE most important single argument in favor of the use of achievement tests is the hypothesis that they enable one to predict the achievement of a pupil at some later time better than the prediction can be made on the basis of chance, or hunches, or a casual subjective appraisal of the pupil. If this hypothesis is correct, tests can help a school undertake a reasonable, objective program of instruction and guidance for each pupil from the time of entrance.

The usefulness of tests for prediction over a period of a few weeks or even a few months is fairly well established as a result of both objective studies and the experience of many different teachers and schools. Their predictive value for periods longer than one year is less well established, because of the difficulty of following up pupils from year to year. This is true especially where secondary-school tests are used to predict achievement-test results in college or where elementary-school tests are employed to predict achievement on tests taken in the secondary school.

The fact that many independent schools administer achievement tests annually and have the tests scored at the Educational Records Bureau, where a record of the results is kept on file, has created a reservoir of test data which may be used in studying relationships over a period of several years. This article reports such a study in which a comparatively small amount of data was used. It is indicative of a type of study that can be made on a much more extensive basis if and when sufficient staff time and funds for research

in studying the background of students, which covered data on why students came to Bennington and on their readiness for college as seen from records of interests, aptitudes, achievements, and plans for the future. They studied and attempted to state more clearly their basic assumptions and aims. They reviewed in detail their curriculum, which from the beginning was not set up in terms of blanket prescriptions and requirements but developed in relation to each student who entered; this phase, therefore, meant an extensive analysis of the range of studies pursued by all students the college has served. They reviewed and appraised the concrete experiences beyond courses that students have in connection with the community government, the winter period when the college is closed for six weeks, the social studies surveys, the senior projects, and the non-residence year. They considered carefully the summary of data on what students do with their time.

The faculty likewise examined and drew implications from evidence collected to answer questions they raised at the beginning of the study such as: Do students follow their interests? What person-to-person relationships are developed to stimulate learning? What attitudes do students develop? They also faced squarely a summary of judgments made of various features of the college by people in the world outside, by students, by graduates (ninety percent of whom had responded to a detailed questionnaire), by former students who had not been graduated, and by the faculty.

Progress has already been made on the reorganization of the program in the light of this intensive appraisal. Late in 1942 a report will be published incorporating the results of the special study and a review of the steps taken to adapt, even more effectively than in the past, the educational program to the needs of students in a changing social order.

The director of the study is Alvin C. Eurich, who prepared this statement.

General Education.—The basic character of the Cooperative Study in General Education of the American Council of Education remains unchanged, with a definite conviction on the part of the participating colleges that especially in the war emergency a high quality of general education is essential. Cooperative faculty and student participation has been utilized in formulation of purposes, selection and organization of materials, development of instructional procedures, and evaluation of results. During the past year the major projects in general education have been concerned especially with problems of student personnel and counseling, social sciences, humanities, science, and administration.

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